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Determinants and Consequences of Corporate Governance Regulation – New Zealand Evidence

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Doctoral of Philosophy
in Accounting

at
Lincoln University

By

Md. Borhan Uddin Bhuiyan

Lincoln University

2010

Pre-Publication of Parts of this thesis

- Chapter – 2:

Bhuiyan, M.B., Roudaki, J. and Clark, M. (2010). Firm characteristics and corporate governance: Evidence from New Zealand, *Proceedings of the Corporate Governance and Global Financial Crisis*, Wharton School, Philadelphia, USA, September 24-25.

- Chapter – 3:

Bhuiyan, M.B., Roudaki, J. and Clark, M. (2010). Corporate governance compliance and discretionary accruals: A comparative analysis of New Zealand Companies. *Proceedings of the 11th Annual Conference of the Asian Academic Accounting Association*, Bangkok, Thailand, November 28 – December 1.

- Chapter – 4:

Bhuiyan, M.B., Roudaki, J. and Clark, M. (2010). The effect of corporate governance regulations on firm value: New Zealand evidence. *22nd Asian-Pacific Conference on International Accounting Issues*, Gold Coast, Australia, November 7-9.

- Corporate Governance Data were used for following:

Bhuiyan, M.B., Roudaki, J. and Clark, M. (2010). The Relationship between characteristics of the Board of Directors and Company Performance – New Zealand Evidence, *Journal of Accounting, Business and Management*, Vol.17 (2).

**Abstract of a thesis submitted in partial fulfilment of the
requirements for the Degree of Doctoral of Philosophy in Accounting.**

Determinants and Consequences of Corporate Governance Regulation – New Zealand Evidence

by
Md. Borhan Uddin Bhuiyan

This thesis contributes to the literature of corporate governance by documenting the association between ‘Comply or Explain’ regulation and managerial opportunistic behaviour and firm value. Following well-publicised corporate collapses in the USA, UK, Europe and Australia, among others, corporate governance has been the centre of attention in the worlds of business and economics. This has led to increased disclosures concerning corporate governance as well as demands for the regulation of systems of corporate governance and internal controls.

From the very beginning, the effectiveness of soft regulation (comply or explain) in New Zealand has been questioned. In order to address this question, three aspects of corporate governance regulations; determinants of compliance, affects on managerial behaviour and investor response to compliance were investigated. Sample companies were drawn from those listed on the New Zealand Stock Market and New Zealand Alternative Market from the years 2000 to 2007 (inclusive).

The first part of the thesis examines the determinants of compliance with corporate governance regulations in New Zealand. A detailed corporate governance index was prepared to measure the level of compliance. Results indicate that the level of compliance is positively associated with the presence of corporate governance regulations. The results also show that listing tenure is an important factor regarding compliance with governance regulations.

The second part of the thesis examines the effects of corporate governance compliance on managerial opportunistic behaviour. Using free cash flow as a measure of total accruals, a comparative analysis of the Jones Model, Modified Jones Model and Performance Matched

Accruals Model was conducted. Results show that higher compliance with corporate governance regulation reduces managerial opportunistic behaviour as measured by discretionary accruals. This suggests that the value of discretionary accruals will reduce, irrespective of the nature of regulations.

The third part of the thesis examines the long term effects of corporate governance compliance. Using enterprise value as a measure of firm value, a comparative analysis was conducted with Tobin's Q and Price-to-Book ratios. Results show that corporate governance compliance has a strong positive effect on firm value. Firms having both lower discretionary accruals and high compliance with corporate governance regulations will lead to increased firm value, reflected in an increase in investor confidence.

Keywords: Corporate Governance, Regulation, 'Comply or Explain', Corporate Governance Index, Free Cash Flow, Discretionary Accruals, Enterprise Value, Firm Value.

To
My Parents and Sister

Acknowledgements

“One can pay back the loan of gold, but one dies forever in debt to those who are kind” – Anonymous

I am thankful to The Almighty for his grace throughout the whole Ph.D. process during the last three years.

The supervision and associate supervision of Dr. Jamal Roudaki and Murray B Clark has undoubtedly helped me to enrich my knowledge and research skills. Both of them contributed significantly in the thinking process and helped me to instil academic logic in research and in my mind. Dr. Roudaki and Mr. Clark were both great motivators in my PhD process, even in non-academic issues. Moreover, I was privileged to communicate about research with both of them at any time.

Dr. Ahsan Habib, Associate Professor at Auckland University of Technology, Auckland, New Zealand; who showed me along the path of my Ph.D. in Lincoln University from the very beginning, made a precious contribution. Irrespective of the geographical location, feedback and suggestions from Dr. Habib were always helpful to the research progress.

Sue Hicks Mason, Tutor co-ordinator in the Accounting & Finance Department at Lincoln University and Eileen Seymour, Post Graduate Administrator, were other cooperative people from the first week of their arrival. Sincerely, this Ph.D. would have been unthinkable without their cooperation. The inspiration and cooperation from Eileen Seymour for research funds was another milestone in completing my research on time. I would also like to thank Belinda Walkyier who encouraged and inspired from the beginning.

I am also thankful to Dr. Ross Cullen (Associate Dean, Faculty of Commerce, Lincoln University) and Dr. Patrick Aldwell (Dean, Faculty of Commerce, Lincoln University) for their cooperation in financing final year research funding and conference budgets.

I'm in debt to Dr. Nazmun Nahar for her cooperation and guidance over the last three years. She always inspired me as younger brother in various difficult situations.

I have been fortunate to come across a few good friends without whom life would be bleak. A special thanks to my friends Mr. Christopher Palma, Netai Paul, Mohammad Didar Hossain, Ehsanul Bashar and Mohammad Faridur Rahman for encouraging me over the hard process of

my PhD over the last three years. I am also appreciative of the encouragement from my fellow Ph.D. candidate Ferdous Alom. I want to thank Professor Chris Wright for being my interim supervisor for a week immediately upon my arrival in Lincoln University. Moreover, it was a pleasure to get cooperation from Dr. Haiyan Jiang and Professor Clive Smallman in different situations.

I would like to thank my parents and sister for their greatest love and sacrifice.

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Chapter 1

Introduction

1.1 Research Rationale

Corporate governance has received greater attention from regulators, professionals and academicians following a series of corporate scandals after 2002 which lead to billions of dollars in losses for shareholders. A series of corporate governance regulations¹ have been imposed to regain investors' confidence in the stock market, most of which are either voluntary or 'Comply or Explain' in nature except Sarbanes Oxley Act - 2002. To this end, The New Zealand Stock Exchange and Securities Commission issued the Corporate Governance Best Practice Code of 2003 and Corporate Governance: Principles and Guidelines of 2004 in addition to other common laws such as the Companies Act 1993.

The effectiveness of these regulations has been questioned from the early stages of implementation (Rose, 2005). Farrar (2005) compares the effectiveness of the New Zealand corporate governance regulations with others in rather similar socio-economic environments, stating :

“...New Zealand has been more dilatory and the governance environment is more permissive than directors would find in Canada, the United Kingdom, the United States or Australia. This is a paradise for directors; a principles-based regime with few rules to underpin it and regulators with little bite. (p. 72)”

The concept of corporate governance was generally in place before implementing the Corporate Governance Best Practice Code 2003 (amended in 2004) and Corporate Governance: Principles and Guidelines 2004 as guidelines, therefore the value addition of voluntary regulation becomes the concern of regulators, professionals and academicians. Consequently, the flexibility of firms to comply with better corporate governance practice in the absence of mandatory obligation raises following important research questions. What determines the corporate governance compliance with regulation? What are the consequences

¹ Regulations to encompasses mandatory regulations including non-mandatory (voluntary and 'comply or explain') corporate governance guidelines and principles.

of complying with corporate governance regulation on earnings management and firm value? These questions remain unanswered due to the very limited research on corporate governance regulation in New Zealand. So, the objectives of the research are as follows:

1. To identify determinants of corporate Governance regulation compliance.
2. To measure the effect of corporate governance on earnings management.
3. To measure the effect of corporate governance compliance on firm value.

Following the objectives, this research considers three specific contexts which are: determinants of compliance with corporate governance regulation, discretionary accruals using free cash flow and firm value. Six sectors, those of service, primary, goods, energy, property and investment are considered relevant in this study. The different determinants and consequences of complying with corporate governance regulations in each sector are investigated.

1.2 Research Framework

The effectiveness of corporate governance regulation in increasing management accountability is well established (Cadbury, 1992; Short, Keasey, Hull, & Wright, 1998). Conflict of interest between managers and owners could be alleviated by effective corporate governance practices (Muth & Donaldson, 1998). Regulatory compliance is one of the important factors differentiating internal or external mechanisms of corporate governance used to monitor managerial accountability. Corporate governance regulations could be categorised as either mandatory or ‘comply or explain²’. Firms may not comply with corporate governance regulations in the absence of mandatory obligation. The ‘Comply or Explain’ nature of corporate governance regulation gives more flexibility to firms in compliance. However, a single corporate governance code and principles may not be suitable for all sectors due to the businesses’ nature and complexity (Braithwaite, Coglianese, & Levi-Faur, 2007; Davies & Schiltzer, 2008; Muleherin, 2005). Consequently, the first context identified the determinants of corporate governance compliance with regulations.

Figure 1 shows the research framework of the thesis. Regulation is one of the major corporate governance mechanisms, derived due to separation of owner and management, but flexibility

² ‘Comply or Explain’ means companies are expected to apply the code and explain reasons for any non-compliance.

in compliance may render the mechanism ineffective. Identifying the determinants of corporate governance compliance with regulation is the primary exploration in this thesis. The existences of corporate governance regulations were considered an important determinant of compliance. Additionally, firms operating for a long time and stock exchange listing status of long tenure indicate better compliance with regulations. Similarly, firms with concentrated ownership status may have increased possibility of better corporate governance compliance with regulations. All these determinants were included in the first context to address the opening objective. The consequences of better corporate governance compliance with regulation were evaluated in relation to those determinants.

The second context in 'Figure 1' elicits the short term consequences of corporate governance compliance on managerial opportunistic behaviour, measured via the proxy of discretionary accruals. Higher compliance will increase management accountability which will subsequently control managerial discretion. Similarly, firms having higher free cash flow increase the possibility of managerial discretion.

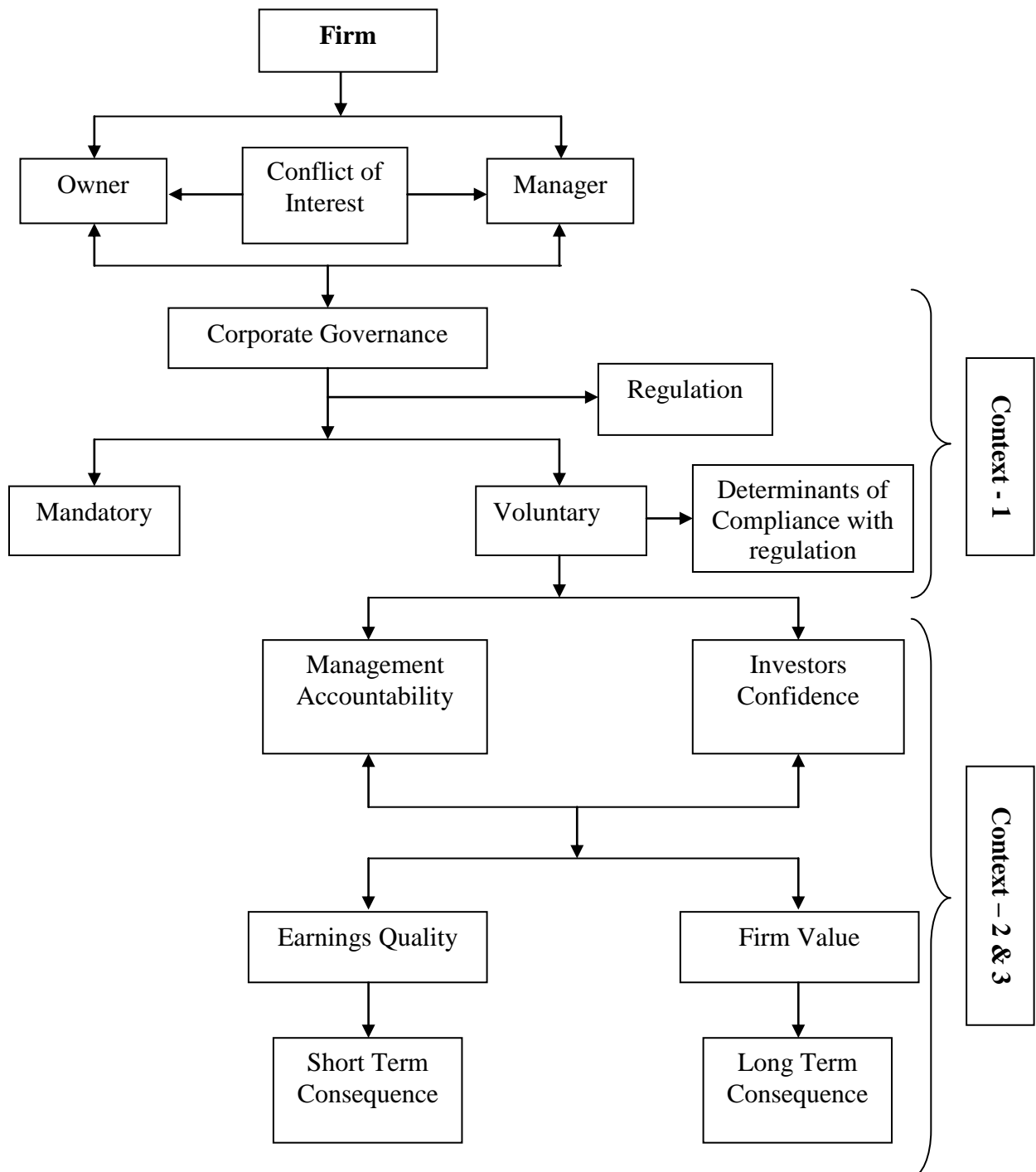


Figure 1: Research Framework

Fundamentally, managers and shareholders have different attitudes towards the risks of projects (Jensen, 1983) which may create managerial discretion in decision making. Managerial incentive schemes such as bonuses or stock options also motivate discretionary

decisions. Managers focus on yearly performance rather than long term and adjust accounting numbers to meet pre-announced forecasts to achieve financial incentives. Firms with better corporate governance compliance reduce managerial discretion and increase quality of earnings. Higher earnings quality enhances investment decisions for potential shareholders and other market forces. Furthermore, firm growth and maturity as proxies of business operating tenure also impact on managerial discretion. All the determinants were included in this context to address the second objective.

The third context in 'figure 1' identifies the long term effects of higher corporate governance compliance with regulations on investor confidence. The fundamental objective of shareholders is to maximise the value of firm and this research would remain incomplete without addressing this issue. Corporate compliance will encourage accountability and lower earnings management results in effective decision-making information being given to the stock market for investors. Hence, investment decisions become more effective in a regulated corporate governance environment and increased investor confidence results in higher firm value.

1.3 Institutional Environment in New Zealand

New Zealand's institutional environment is significantly different from other developed countries. Regulation and market monitoring mechanisms are also unique in comparison with the USA, Canada, UK and Australia. The New Zealand Exchange (NZX) and Securities Commission of New Zealand have a strong desire to self-regulate because most of the corporate governance regulation is principle based. New Zealand has had extensive deregulation over the whole economy since 1984, which have changed its reputation from an almost socialist country to one of the more business friendly countries in the world (Walsh, 1988). However, New Zealand business sectors are becoming more foreign owned which invites some criticism of the effectiveness of deregulation.

The NZX and Securities Commission, together with other regulators, have developed unparalleled self regulatory models of corporate governance best practice codes and principles. Financial reporting standards have become more principle based and self regulated compared to the USA, UK and Canada. Management in New Zealand provides relatively more opportunity to use individual judgement and experience in decision making. In the US, management is under heavy pressure to meet the quarterly forecasts, whereas New Zealand

management is more flexible. Furthermore, US firm managers have more incentives to meet targets by managing earnings, while New Zealand boards are more independent from the companies and face no legal penalty for wrong forecasts given to shareholders (Farrar, 2005) and that may result in more earnings manipulation.

Figure 2 shows that New Zealand's corporate governance structure is similar to the Anglo-American model (Eldin, 2003). The ownership structure of New Zealand corporations is separate from the control of organization resources. Shareholders have no explicit contractual relationship with the management. Similarly, statutory regulations allow company boards to manage the business and affairs of organization, but not specific functions. Shareholders appoint directors in annual meetings from the proposed candidates by nomination committee.

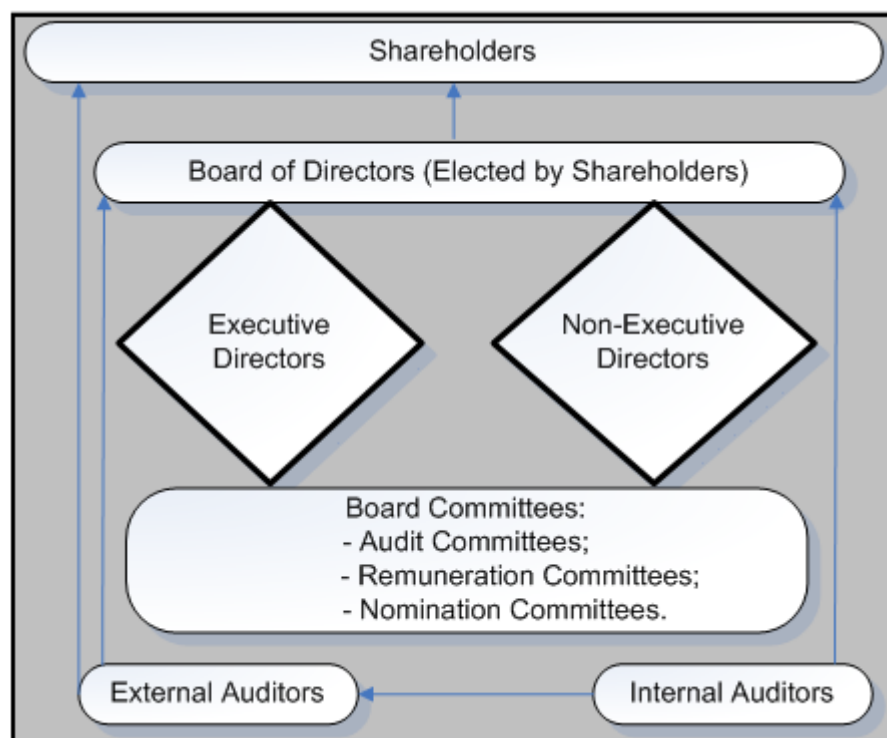


Figure 2: Corporate Governance System in New Zealand

Ownership concentration in New Zealand is also different from the USA, UK and Australia. Concentrated ownership enables the principal shareholder to monitor managerial performance closely, which reduces managerial discretion in decision making. However, minority shareholders might be given lower priority due to the principal shareholder's interests. Directors' legal provisions in New Zealand mostly serve the shareholders whereas

the US corporate governance is mostly based on rules that have a propensity to protect stakeholders.

Finally, the financial reporting standards are mostly principle and guideline based which allows flexibility in financial reporting. The judgement of the standard of financial reporting may differ from industry to industry or even firm to firm. However, rule based financial reporting still enables a firm to prepare financial reports in their own unique manner as all the firms are obliged to comply with a single rule. Investor protection is much stricter, due to mandatory regulation and more accurate forecasting expected from management.

1.4 Research Findings

The findings of the first objective, determinants of corporate governance compliance reveal that the existence of corporate governance regulation is indeed a significant factor in firms compliance levels. In fact, the results suggest that firms comply with regulation even in the absence of mandatory obligation to comply. Long term business operating and listing tenure have significant effects on corporate governance compliance, which implies that corporate governance practices increase with the maturity of the firm. In addition, concentrated ownership also correlates with better corporate governance practices with regulation.

The second objective, consequences of higher corporate governance compliance, shows a short term effect as lower discretionary accruals. In addition, firms with large shareholdings show higher discretionary accruals whereas firms listed in the stock exchange reveal lower discretionary accruals. This implies that concentrated ownership has a significant impact on discretionary accruals. Discretionary accruals are calculated using free cash flow and compared using the most widely used earnings management models such as the Jones Model (1991), Modified Jones Model (1995) and Performance Matched Model (2005).

The third objective, consequences of higher corporate governance compliance, shows long term effects on shareholders' views such as firm value. Shareholders and managers both have the shared objective of maximising a firm's value in the long run. The firm's value is calculated based on enterprise value, which reflects the current market value while also considering cash holdings and debt obligations. Results show that high compliance with corporate governance regulation increases firm value. A firm operating with concentrated ownership was shown to reduce the value of a firm which implies that minority shareholders encounter risks when investing in highly centralised ownership firms.

1.5 Research Contributions

This research contributes to corporate governance, earnings management and firm value literature and practices in the New Zealand context.

This is the first research of corporate governance in New Zealand to include a wide range of corporate governance factors when analysing the consequences of compliance with corporate governance regulation. Therefore, a comprehensive corporate governance index was prepared, following the New Zealand corporate governance regulations. It includes different aspects of compliance such as boards of directors, board committees, external auditors, management ownership and dual stock exchange listing. As a consequence, both short term and long term effects were measured for the companies complying with better corporate governance.

The second contribution was that of using discretionary accruals to measure the effect of better corporate governance compliance with regulations. Management have more discretionary opportunity in the area of free cash flow. Previous research focused on operating cash flow but management also have more discretionary options in financing cash flow. So, cash flow from operating and financing activities were both deducted from net income to measure total accruals. The association of performance and discretionary accruals was evidenced by return on assets. The Performance Matched Free Cash Flow Model, which was based on free cash flow measurement, showed better explanatory power in comparison with the Jones Model (1991), Modified Jones Model (1995) and Performance Matched Model (2005).

Thirdly, firm value measured as the enterprise value. The enterprise value calculation considers debts when buyers take over the firm, reflecting a more accurate firm value than the immediate takeover price. This research contributes to the literature that asserts enterprise value has more explanatory power than the two other commonly used models: Tobin's Q and Price-to-book ratio.

Finally, this research evidenced that firms comply with voluntary regulation in the absence of mandatory obligation, which means non-compliant firms fall under pressure from compliant companies in the same industry. Similarly, potential shareholders want to make sure proper

internal control systems exist before investing, showing that investors in a structured capital market like New Zealand are also aware of the benefits of corporate governance compliance.

1.6 Research Outline

This research proceeds as follows: Chapter 2 presents the first objective, namely: Firm Characteristics and Corporate Governance – Evidence from New Zealand. Chapter 3 presents the second objective, namely: Corporate Governance Compliance and Discretionary Accruals: A Comparative Analysis of New Zealand Companies. Chapter 4 presents the third objective of this research, namely: The Effect of Corporate Governance Regulation on Firm Value: New Zealand Evidence. Finally, the research concludes in Chapter 5. Each of the chapters 2, 3 and 4 includes the sections of introduction, literature review, hypothesis, methodology, sampling process, results analysis and conclusions.

Chapter 2

Firm Characteristics and Corporate Governance – Evidence from New Zealand³

2.1 Introduction

This chapter contributes to the corporate governance regulation literature by investigating the association between characteristics of the firm and compliance with corporate governance regulation in a regulatory environment where enforcement is not mandated but follows a ‘comply or explain’ regime. Most of the corporate governance best practice codes are of the ‘comply or explain’ type, which means that firms need to mention the cause of non-compliance whereas voluntary regulation allows firms to ignore the non-compliance without explanation. Understanding the determinants of corporate governance compliance is important because the existing literature does not show any concrete evidence concerning companies that operate in the ‘comply or explain’ environment. However, it is noted that investors generally prefer that firms do comply with corporate governance regulations because this signals better accountability of directors, strong internal control systems and accurate financial reporting.

The separation of ownership from management raises the issue of monitoring managerial activities to ensure investor confidence. Following a spate of well-publicised corporate collapses in the USA, UK, Europe and Australia, among others, corporate governance has been the centre of attention in the world of business and economics. Users of accounting information, such as investors, government agencies, auditors and financial analysts, have focussed on monitoring corporate governance systems. This leads to increased disclosures about corporate governance, demands for the regulation of systems of corporate governance, and consequentially, enhanced internal control systems. Regulators, academics and practitioners around the world now evaluate corporate governance regulations and compliance from inception to the implementation of a suitable and sustainable system that

³ This Chapter provided the basis of a paper that was co-authored with Dr. Jamal Roudaki and Murray Clark, and was published at a conference on Corporate Governance and the Global Financial Crisis, The Wharton School, Philadelphia, USA, September 24-25, 2010.

takes account of the socio-economic environment relevant to any particular company. The issue of compliance with corporate governance regulations/guidelines is the focus of this chapter.

Corporate governance is not new; systems of corporate governance have been in place for quite some time before the introduction of recent regulations or guidelines such as the Corporate Governance Best Practice Code 2003 published by the New Zealand (Stock) Exchange (NZX) , the Sarbanes-Oxley Act (SOX) in the USA, and the OECD Corporate Governance Guidelines (Goldfinch, 2004). Most of these corporate governance codes are voluntary in nature, but it is expected that companies will achieve a minimum level of compliance in order to meet their perceived social responsibilities.

Researchers argue against non-mandatory regulations (Aguilera & Cuervo-Cazurra, 2004; Blackman, 2008; Carver, 2007; MacNeil & Li, 2006; Sinclair, 1997) because the flexible nature of this type of compliance regime does not necessarily lead to the lowering of the cost of capital for the companies involved (Darren, 1997; Fasterling, 2005; Jesover & Kirkpatrick, 2005). Voluntary regulations, however, can be effective because compliance enables companies to satisfy specific requirements, and the level of compliance is influenced, if not determined, by the characteristics of these firms (Collett & Hrasky, 2005). Consequently, it is important to determine the factors that influence compliance with corporate governance regulations in a regulated environment. Irrespective of the nature of corporate governance regulations, it is apparent that regulation has a positive impact on governance compliance (Shivasani & Zenner, 2004).

The results of this study show that New Zealand companies comply with corporate governance regulations even though it is not mandatory to do so. Evidence was also found of compliance with corporate governance regulations being positively associated with stock exchange listing tenure, business operating tenure and concentrated ownership structure of companies, and negatively associated with the business operating cycle. This research contributes to the literature by providing a test that incorporates a comprehensive corporate governance index. These tests appear theoretically superior to the single period tests used in much of prior research on voluntary corporate governance compliance (Collett & Hrasky, 2005)

The remainder of the chapter is organised as follows, section 2.2 reviews the prior literature on governance regulations. Section 2.3 develops the hypotheses, section 2.4 describes the research methodology, and section 2.5 explains the data used in this study. Data analysis is presented in section 2.6 as descriptive, correlation and regression analysis. Finally, section 2.7 presents the research findings and comments on further research and recommendations.

2.2 Literature Review

The fundamental controversy that affects firms was pointed out by Adam Smith (1776) indicating that managers do not exercise the same degree of vigilance because they are not dealing with their own money. Berle and Means (1932) initiated the discussion on ‘conflict of interest’ regarding the separation of owners and managers in large corporations. Jensen and Meckling (1976) document that managers may commit ‘moral hazard’ merely to enhance their own personal wealth at the expense of the principals. Jensen (1983) recognises two steps in minimizing this agency problem; the efficient design of risk bearing mechanisms and monitoring of management, i.e. ‘positive agency theory’. Risk bearing mechanisms indicate transferring the optimum level of decision making rights to managers in order to maximise return on investment, while positive agency theory means modelling the effects of additional aspects of organizations and their survival, such as capital intensity and information costs.

The word ‘corporate governance’ was first used by Richard Eells (1960) to mean a set of customs, policies and laws used to direct and control a corporation. Corporate governance was initially centred on board of director independence and effectiveness. Following a series of corporate collapses that occurred early last decade, the roles played by supervisory committees and auditors as mechanisms of corporate governance, along with management ethics, have increased in importance. The Cadbury report in 1992, regarding the voluntary regulation of corporate governance, was a milestone report that led to many countries issuing ‘best practice codes’ for corporate governance. The Sarbanes Oxley Act (SOX) 2002 in the United States of America is probably the most recognised response to the many corporate collapses that occurred in that country. The main focus of SOX is on enhancing internal control mechanisms, promoting audit independence, and providing penalties for non-compliance. Compliance with SOX is mandatory for US listed companies.

A review of the literature shows that company performance is enhanced when corporate governance regulations or guidelines have been complied with. Investors, regulators and

other stakeholders clearly consider compliance to be important (Fasterling, 2005). In addition to regulation, governance practices are also reflected in different factors such as culture, traditional financial options, corporate ownership patterns and legal origins (Zattoni & Francesca, 2008). It is generally accepted that the purpose of regulations concerning corporate governance is not to increase the value of a firm but to enhance the 'safety' of investors. Consequently pressure from the regulatory authorities will 'encourage' firms to comply with voluntary codes of best practice. Bechner and Freyer (2009) suggest that regulations and governance act in a complementary manner to resolve the agency problem associated with absentee owners. Regulations reduce management dominance in the firm by increasing the influence of external parties such as auditors and shareholders. Conversely, deregulation increases the influence of management (Kole & Lehn, 1997).

In a regulated environment, the internal control system of firms is expected to be secure, whereas monitoring costs are higher if the environment is deregulated because firms need to regularly monitor management activity for the sake of shareholders' investment and return. Therefore, it can be argued that a regulated environment ensures better monitoring and lower agency costs. Moreover, regulations ensure a unique system or standard in the economy and enable the comparison of industry level practice. In short, the business environment will be unstable in the absence of regulations (Kole & Lehn, 1997).

Regulation, as the most basic external corporate governance mechanism, has received greater attention since the beginning of 21st century (Denis, 2001). Firms operating in a competitive market are essentially required to have a minimum level of corporate governance structure because of general regulations and civil laws. Kole and Lehn (1997) argue that firms will not be able to exist without corporate governance.

The main reasons for implementing a code of corporate governance then, are the mitigation of the agency problem and the provision of improved monitoring for shareholders. Machuga and Karen (2009) suggest the following three reasons for the protection of shareholders' interest. Firstly, regulations provide guidelines for achieving the maximum benefit for investors. Secondly, regulations are necessary to ensure the maintenance of an appropriate standard of governance, and finally, maintaining governance standard reduces cost of capital which enhances firm value for shareholders.

In summary, the corporate governance literature explained different effects of corporate governance compliance (Aguilera & Cuervo-Cazurra, 2009; Lara, Osma, & Penalva, 2007; Stiles, 2001) but this research elaborates on existing knowledge by documenting the determinants that relate to the ‘comply or explain’ type of regulation. Specifically, this research assumes that corporate governance compliance level does not depend on regulation only.

2.3 Hypotheses

The hypotheses developed in this section test the relationship between the corporate governance index (calculated as detailed in the following section) and the existence of corporate governance regulations, listing tenure, ownership concentration, and business operation tenure – all factors acting as determinants of corporate governance compliance with regulations.

2.3.1 Regulation

As discussed above, corporate governance evolved due to the existence of the agency problem associated with the separation of owners and managers, and regulation can mitigate the conflicts that arise as a result (Drobetz, 2002; Kirkbride & Letza, 2004). It is generally assumed that a regulatory environment would result in enhanced corporate governance because companies are meant to comply with the relevant regulations, and the literature shows that regulation has a positive impact on corporate governance compliance (Hermalin, 2005; La-Porta, Lopez-de-silanes, & Shleifer, 1998, 1999; Udaysankar & Das, 2007). Indeed, regulation has always had an impact on general financial reporting and disclosure practices. Regulation also enhances the quality of audited report followed by organizational performance. Conversely, companies operating in the market have a minimum corporate governance practice (Kole & Lehn, 1997) but compliance is always questionable in the absence of mandatory regulation and guidelines. Thus, the first hypothesis stated in the null form is:

H₀₁: There is no relationship between corporate governance regulation and corporate governance compliance.

2.3.2 Listing tenure

The Stock Exchange is one of the main promoters of corporate governance compliance. Cormier & Martinez (2006) evidenced a positive association between corporate governance

compliance and stock market listing. The New Zealand (Stock) Exchange (NZX) has prepared and published the Corporate Governance Best Practice Code 2003, based on principles and guidelines of corporate governance as issued by the Securities Commission of New Zealand. Listing on the New Zealand Exchange requires companies to comply with all the regulations of government and the Securities Commission. It is therefore anticipated that companies that have been listed for a long period of time will have a greater degree of compliance with the corporate governance best practice code as compared to companies that have only been listed for a short period of time. Hence the second hypothesis which, stated in the null form, is as follows:

H₀₂: There is no relationship between listing tenure and corporate governance compliance.

2.3.3 Ownership concentration

Separation of ownership and management raises conflicts between the goals of owners and managers, which may be due to different managerial effort and attitudes toward risk. Therefore, different control mechanisms like internal audit or external control should be used to align the interests of both parties. Agency costs and risk can be reduced by sharing ownership of the organization (Bozec & Bozec, 2007). However, concentration of ownership may frustrate the reduction in agency costs and risks since the degree of control that can be exerted by the owners of concentrated holdings may lead to decisions intended to maximise their personal wealth. Effective corporate governance should counter this possibility. It is therefore hypothesised that companies that comply with the corporate governance code will not be influenced by parties that have concentrated holdings of shares. Thus the third hypothesis, stated in the null form, is:

H₀₃: There is no relationship between ownership concentration and corporate governance compliance.

2.3.4 Business operating tenure

Firms that survive in the competitive market are presumed to have an optimum level of corporate governance compliance (Kole & Lehn, 1997), and it should not matter whether these companies exist in a regulated or unregulated environment. Indeed, companies have been in existence for decades, long before any regulations for corporate governance were promulgated. Arguably, firms that have been operating for a long time must have a strong system of corporate governance (Owusu-Ansah, 2005). On the other hand, voluntary

compliance with corporate governance codes may impose a significant cost on those companies and they may not be willing to comply unless it is mandatory to do so. Companies also need to signal to stakeholders that they do have a ‘good’ level of corporate governance, particularly if they are a mature company. Growth firms, on the other hand, tend to be more aggressive during their start-up stage and, perhaps, have slightly less effective internal control systems. It is therefore hypothesised that in a regulated environment, a mature firm will have a high level of compliance with corporate governance regulations. Hence, the fourth hypothesis, stated in the null form, is:

H₀₄: There is no relationship between business operating tenure and corporate governance compliance.

2.4 Methodology

This section describes the research methodology used in this study, the dependent and independent and control variables, the corporate governance index that was used and the measurement of the dependent variables.

2.4.1 Corporate Governance Index

Corporate governance consists of a complex set of interrelationships so using a single factor or variable to measure corporate governance is problematic. Researchers tend to examine the overall impact of a much broader corporate governance mechanism by formulating a corporate governance index and rating systems (Beekes & Brown, 2006; Berghe & Levräu, 2004; Florou & Galarniotis, 2007; Strenger, 2004). In this study, the index accumulates all aspects of corporate governance including board of directors’ attributes, external auditor, supervisory committees, management shareholdings, and listing tenure of firms.

The index is calculated as:

$$CGI_{it} = \frac{\sum CVCG_{it}}{\sum MPVCGC_{it}} \times 100$$

Where:

CGI_{it} = Corporate governance index for firm i in year t ;

$CVCG_{it}$ = Cumulative value of corporate governance for firm i in year t ;

$MPVCGC_{it}$ = Maximum possible value of corporate governance compliance for firm i in year t ;

i = firm; and

t = year.

The corporate governance index is a composite measurement based on dichotomous variables and actual values measured (Lara et al., 2007; Larcker & Richardson, 2004; Larcker, Richardson, & Tuna, 2005, 2007).

2.4.2 Measuring Corporate Governance Index

A Corporate Governance Index (CGI) was prepared based on corporate governance regulations comprising the Corporate Governance Best Practice Code 2003 by New Zealand Exchange Limited, the Corporate Governance Guidelines and Principles issued by the Securities Commission of New Zealand Exchange Commission, plus other regulations such as the Companies Act 1993 and the NZX Listing Act. The corporate governance index includes twenty factors grouped into four main categories (called scores), as follows:

1. Board of Directors Score (BDS)

I. Number of directors: The Companies Act 1993 requires that companies must have at least one director. The median number of directors for all companies in the sample were calculated to be six over the sample period, and each sample company was compared to this median. This variable is assigned a value of 1 if the number of directors is not less than the median, and 0 otherwise.

II. Board independence: The Corporate Governance in New Zealand: Principles and Guidelines 2004 (Securities Commission of New Zealand) recommended that there should be an appropriate balance of executive and non-executive directors. The NZX listing rules and the Code of Practice for Directors in

New Zealand suggest that the majority of directors should be independent and that there should be at least two independent non-executive directors. The median ratio of independent directors for all companies was calculated to be 0.60. This variable is assigned a value of 1 if the ratio of independent directors is not less than the median, and 0 otherwise.

III. Board tenure: Businesses operate in an increasingly complex environment and the tenure of the top management team have an effect on firm performance (Canavan, Jones, & Potter, 2004). Newly appointed managers need time to adjust to the business environment and to set up appropriate strategies that align with existing goals. Conversely, directors who stay with the same firm for a period of time should be more familiar with and better understand the governance requirements for that business. The corporate governance regulations encourage re-appointment of directors, but remain silent on what the most appropriate tenure might be. The median combined tenure (in years) of the directors on the board for all companies in the sample was calculated to be 31 years, and each sample company was compared to this median. This variable is assigned a value of 1 if the combined tenure (in years) of all directors in the sample company exceeds the median, otherwise the value is 0.

IV. Busy board: The Corporate Governance in New Zealand: Principles and Guidelines 2004 suggest that the board should allocate time and resources to encourage directors to acquire and retain a sound understanding of their responsibilities. Board members who hold directorships in other firms have less time to devote to any particular entity, but the corporate governance regulations are silent about the specific number of directorships that would be appropriate for one individual to hold. The median measure of board ‘busyness’ – the total outside directorships held by the board for all the companies in the sample was calculated to be 24, and each sample company was compared to this median. This variable is assigned a value of 0 if the total outside directorships is greater than median, otherwise the value is 1.

V. Board Meetings: The Corporate Governance in New Zealand: Principles and Guidelines 2004 state that the board should allocate time and resources to understanding their responsibilities and the implementation of monitoring activities. However, these guidelines are silent with respect to the frequency of board meetings. The median number of board meetings per year for all

companies in the sample were calculated to be 8, and each company was compared to this median. This variable is assigned the value of 0 if the number of board meetings was less than the median, otherwise the value is 1.

VI. CEO Duality: The Corporate Governance in New Zealand: Principles and Guidelines 2004, the NZX listing rules, and the Corporate Governance Best Practice Code 2003, all recommend that the Chief Executive Officer should not be the chair of the Board. This variable is assigned the value of 0 where the CEO has this dual role, 1 otherwise.

VII. CEO experience: The longer the CEO has been employed by the company, the more he or she should know and understand the activities of the company; hence he or she should be more valuable as a director. It also follows that CEO experience should be a factor that contributes to the success of the corporate governance practices of the firm as well as to the overall success of the firm. The median period of tenure as CEO was calculated for all companies in the sample and each sample company was compared to this median to be 3 years. This variable is assigned the value of 1 if the CEO has not less than the median number of years of experience and 0 otherwise.

2. Board Committee Score (BCS)

I. Number of board committees: The Corporate Governance Best Practice Code 2003 and the NZX listing rules recommend that every board should have an Audit Committee, a Remuneration Committee, and a Nomination Committee. Companies that have all three board committees are coded 1, 0 otherwise.

II. Audit committee size: The NZX listing rules and the Corporate Governance in New Zealand Principles and Guidelines 2004 both emphasise that the size of the audit committee is an important factor in the effective monitoring of internal control systems and in maintaining an effective relationship with the external auditor. The median size of the audit committee was calculated as 3 members for all companies in the sample and each sample company was compared to this median. This variable is assigned the value of 1 if the audit committee was not smaller than the median, 0 otherwise.

III. Audit committee financial expertise: The NZX listing rules and the Corporate Governance in New Zealand: Principles and Guidelines 2004 both specify that

at least one member of the audit committee should have financial expertise. This variable was assigned the value of 1 if the company followed this recommendation, 0 otherwise.

IV. Audit committee meetings: As stated above, both the NZX listing rules and the Corporate Governance in New Zealand: Principles and Guidelines 2004 recommend that companies have an effective audit committee. Prior research suggests that the frequency of audit committee meetings is an indicator of the effectiveness of that committee (DeAngelo, 1981). The median number of meetings held by the audit committee is calculated as 3 times a year for all companies in the sample and each sample company compared with this median. This variable is assigned the value of 0 if the audit committee met less frequently than the median and 1 otherwise.

V. Audit committee experience: Following similar arguments as advanced for experience as a director, the collective experience of the audit committee members is also a factor in having an effective audit committee. The median number of total years experience as a member of the audit committee was calculated to be total 18 years for all companies in the sample and each sample company were compared to this. This variable is assigned a value of 1 if the experience of the audit committee was not less than the median, and 0 otherwise.

VI. Chair of audit committee: The Corporate Governance in New Zealand: Principles and Guidelines 2004 recommend that the chair of the board of directors should not also be the chair of the audit committee. This variable is assigned a value of 0 if the same person was appointed as chair of both committees, and 1 otherwise.

VII. Independent directors in audit committee: The NZX listing rules, the Corporate Governance Best Practice Code 2003 and the Corporate Governance in New Zealand: Principles and Guidelines 2004, all recommend that every member of the audit committee should be a non-executive director and the majority of directors should be independent. The median ratio of independent directors on the audit committee was calculated as 0.67 for all companies in the sample and each sample company compared to this median. This variable was assigned a value of 0 if the number of independent directors on the audit committee is less than the median, and 1 otherwise.

VIII. Independent and executive director ratio in nomination committee: The composition of the nomination committee provides a signal to the market regarding the company's attitude towards the selection of directors as well as board independence (Bostock, 1995). The Corporate Governance Best Practice Code 2003 and the NZX listing rules both recommend that independent directors should make up the majority of the Nomination Committee. The median ratio of independent directors on the nomination committee was calculated to be 0.40 for all companies over the sample periods and each sample company were compared to median. This variable is assigned a value of 0 if the ratio of independent directors on the audit committee is less than the median, and 1 otherwise.

3. Audit Score (AS):

I. Big 4 audit firm⁴: The Corporate Governance in New Zealand: Principles and Guidelines 2004 emphasise the importance of having a high quality external auditors and audit processes. It is expected that the 'Big 4' audit firms will provide a higher quality audit process and independent audit opinion. This variable is therefore assigned a value of 1 if the company is audited by a 'Big 4' firm, and 0 otherwise.

II. Auditor tenure: The Corporate Governance in New Zealand: Principles and Guidelines 2004 recommend that the maximum period of appointment for an auditor should not exceed five consecutive years. This variable is therefore assigned a value of 0 if the company is audited by the same auditor for more than five years and 1 otherwise.

III. Non-audit fee and audit fee ratio: The Corporate Governance in New Zealand: Principles and Guidelines 2004 recommend that the board should annually report to the shareholders and stakeholders the amount of fees paid to the auditor for audit and non-audit services separately. Moreover, non audit work should not be capped to a specific proportion of all fees paid to an audit firm. The median ratio of audit fees to total fees was calculated as 0.40 for all companies in the sample and each sample company was compared to this

⁴ Big 6, Big 5 and Big 4 are contemporary terms.

median. This variable is assigned a value of 0 if the ratio of fees paid to the auditors is more than the median, and 1 otherwise.

4. Director Ownership and Listing Score (DOLS):

I. Overseas listing status: The NZX listing rules exempt some companies that are listed overseas and in New Zealand from having to comply with some of the corporate governance requirements. It is assumed that overseas listing impacts positively on the quality of the firm's corporate governance practices. This variable is assigned a value of 1 if the company is also listed on an overseas stock exchange and 0 otherwise, i.e. if the company is listed only on the New Zealand stock exchange.

II. Director shareholdings: Shares that are directly or indirectly held by directors could lead to decisions that benefit them personally at the expense of the company. Thus their judgement or decisions could be impaired, or at least influenced, by their personal shareholdings. The possibility of such a conflict of interest is considered to be factor that could influence the efficacy of the firm's corporate governance practices. The median proportion of director shareholding as compared to the total outstanding shares of the firm over the duration of the study was calculated to be 3.15%. The proportion of director shareholding for each company was compared to the median and the variable is assigned a value of 0 if the proportion of director shareholding is greater than the median, otherwise the value is 1.

An index of corporate governance was prepared based on the twenty factors explained above. The maximum value for the corporate governance index is twenty, which initiates the highest level of compliance with corporate governance regulation and guidelines.

2.4.3 Independent Variables

The independent variables of corporate governance index are described below.

2.4.3.1 Regulation

Companies that operate in a regulated environment are expected to have higher compliance with corporate governance regulations than companies that operate in an unregulated environment. A dummy variable equal to 1 is assigned to companies that are operating after 2003 (the year when the Corporate Governance Code was adopted) whereas companies

operating before 2003 (inclusive) are assigned 0. A positive relationship with the corporate governance index is therefore expected.

2.4.3.2 Listing Tenure

Listing tenure is measured in years as the New Zealand Stock Exchange listing duration till to the respective sample period. A positive relationship with the corporate governance index is expected because firms that have been listed for a period of time have to comply with the NZX listing requirements with regard to corporate governance.

2.4.3.3 Ownership Concentration

Ownership concentration is measured as the natural log of the Top-20 shareholders of the firms. Large shareholders have more influence over the activities of the firm, which may lead to the pursuit of objectives set by these shareholders rather than for the benefit of all shareholders. The corollary is that small shareholders are essentially powerless and have little or no influence over business activities. Therefore, a positive relationship between ownership concentration and the corporate governance index is expected.

2.4.3.4 Business Operating Tenure

Business operating tenure is measured as the log value of the operating years of the firm from the incorporation of business to the respective sample period. Firms operating for a short period of time may overtly comply with the regulations in order to appear more attractive to potential investors, but those who have been operating for a considerable period of time may ‘slacken off’. A negative (positive) relationship between longer business operating tenure (shorter business tenure) and the corporate governance index should exist, respectively.

2.4.4 Control variables

Most of the corporate governance factors depend on business size, measured as total assets (Cormier & Martinez, 2006). Company size has an impact on the composition of the board, the audit process, the structure of the audit committee, and the independences of directors. Further, the ‘depth’ of audit service depth and the choice of auditor are also influenced by the size of the business. Consequently, total assets were used as a proxy for firm size. A review of the literature also reveals that leverage is another factor that is controlled for in prior research (Cormier & Martinez, 2006); so, does this study. Ideally, a highly leveraged firm will have more supervision and needs a strong system of internal control structure. Such companies are likely to have more independent directors, which should lead to better

corporate governance. Similarly, monitoring activities may impact on audit structure of the business.

2.4.5 Regression Model: Ordinary Least Square

The following regression model was used to examine the effect of the variables outlined above on the corporate governance index.

$$CGI_{it} = \beta_1 + \beta_2 REGDUMMY_{it} + \beta_3 NZXLIST_{it} + \beta_4 Log(OWNCON)_{it} + \beta_5 Log(BUSSOPER)_{it} + \beta_6 BUSSIZE_{it} + \beta_7 LEVERAGE_{it} + \sum_{i=8}^{12} SECTOR_DUMMY_{it} + \varepsilon_{it} \dots \dots (1)$$

Where:

<i>CGI</i>	= Corporate Governance Index;
<i>REGDUMMY</i>	= Regulation dummy 1 for regulated corporate governance regime and 0 otherwise;
<i>NZXLIST</i>	= NZX listing tenure;
<i>OWNCON</i>	= Log value of Top 20 shareholders ownership accumulation;
<i>BUSSOPER</i>	= Log value of business operation tenure;
<i>BUSSIZE</i>	= Total Assets as a proxy of Business Size;
<i>LEVERAGE</i>	= Log value of firm leverage;
<i>SECTOR_DUMMY</i>	= Dummy variable of sectors;
ε	= Error term
<i>i</i>	= Individual firm
<i>t</i>	= Year

Equation 1 implies that the firm's current corporate governance index rating is determined in a systematic manner by its regulatory environment (REGDUMMY); stock exchange listing tenure (NZXLIST); ownership concentration (OWNCON) [indicating the ownership of the top 20 shareholders]; operating tenure of the firm (BUSSOPER); firm size (a proxy for total assets); leverage (a proxy of external stakeholders: debt financing); and dummy variables representing six different sectors of production following NZX listing category. The service

sector is the intercept of the equation and the other five dummy variables represent the other sectors (primary, energy, goods, property, and investment), thereby avoiding the dummy-variable trap (Gujarati & Porter, 2009). In other words β_1 represents the service sector and $\beta_{8(primary)}$, $\beta_{9(energy)}$, $\beta_{10(goods)}$, $\beta_{11(property)}$, and $\beta_{12(investment)}$, are the differential intercept coefficients that indicate how much the intercepts of primary, energy, goods, property and investment sectors differ from the intercept of service sector. In effect, the service sector becomes the comparison sector. Researchers are free to use any dummy variable as the intercept (Gujarati & Porter, 2009), and the service sector was selected because of the number of companies in service sector being higher than other sectors.

2.5 Data

The sample of companies used in this study was selected from those listed by the New Zealand Stock Exchange Limited (NZX). There are two markets in the NZ Stock Exchange. The New Zealand Stock Market (NZSE) is the main board of NZX where the premium equities are traded. The second board is the New Zealand Alternative Market (NZAX) which comprises companies which, typically, are new, experiencing rapid growth, and able to issue shares for low cost. The sample was drawn from both markets. The sample period covers the years 2000 to 2007, inclusive. By the end of August 2008, a total of 153 companies were listed by NZX. Twenty nine Companies were excluded as those operated in the financial sector which is subject to specific regulations and reporting procedures. Thirty-five companies did not provide a complete set of financial reports, and the financial information for 19 companies was not available.

Table 1: Distribution of Sample Listed Companies

Sector	#
Primary	9
Energy	8
Goods	11
Property	5
Investment	5
Service	32
Final Sample	70

The final sample of 70 companies was classified in six sectors using the NZX categories, as above in table 1.

2.6 Results

The objective of this study was to investigate corporate governance compliance due to regulatory supervision as exemplified by the Corporate Governance Best Practice Code 2003, Companies Listing Code, and Companies Act 1993. The results of descriptive statistic, correlation matrix and regression analysis are presented here.

2.6.1 Descriptive statistics

The composition of the Board of directors has been recognised as the primary corporate governance factor (Hossain, Prevost, & Rao, 2001). Table 2 shows the average board size to be approximately 7 members with 4 independent directors. Hossain et al. (2001) found similar results using an NZX sample taken from the period 1992-97. They also found 135 firm years (22%) CEO dualities whereas our finding indicates 90% of firms are free of CEO duality.

Table 2: Descriptive Analysis of CGI - Board of directors

Details	Total Directors (Person)	Board Independence (Person)	Board Meetings (Number)	Busy Board (Outside directorship)	Experience of Board (Year)	CEO Duality (Binary)	CEO Experience (Year)
Mean	6.23	3.83	7.84	25.8	35.82	0.90	4.7
Median	6	4	8	23.5	31	1	3
Maximum	13	12	15	108	122	1	23
Minimum	3	0	1	7	4	0	1
Std. Dev.	1.58	1.55	2.912	13.12	19.66	0.30	3.87

Moreover, Ahmed, Hossain and Adams (2006) documented 7 (specifically 6.538) board members with 56.5% being independent directors. They also documented 18.9% firm years under CEO duality. These results show that the size of the board of directors and the degree of director independence has remained the same, but that CEO duality has fallen. It is suggested that this fall is due to the implementation of corporate governance regulations.

Table 3: Descriptive Analysis of CGI – Board Committees

Details	Audit Committee Chairman (Binary)	Audit Committee Education (Binary)	Audit Committee Experience (Year)	Audit Committee Independent Director Ratio	Audit Committee Meeting Frequency	Audit Committee Size (Person)	Nomination Committee Independence Ratio	Total Board Committee (Number)
Mean	0.73	0.92	20.24	0.69	3.37	3.31	0.40	2.41
Median	0	1	18	0.67	3	3	0.40	3
Maximum	1	1	62	1.67	12	7	1	3
Minimum	0	0	0	0	0	0	0	0
Standard. Deviation	0.5	0.27	11.90	0.28	1.70	0.96	0.36	0.81

New Zealand companies are practicing better corporate governance by using board committees such as audit, remuneration and nomination committees. Porter & Gendall (1998) found that 60% of companies had audit committees whereas results in table 3 show that 73% of New Zealand companies now have audit committees. Therefore it can be concluded that corporate governance practices have improved. The minimum size of audit committees remains the same at (approximately) 4 members, as reported in previous research (Porter & Gendall, 1998). They consider that having an audit committee is a good indication of corporate governance practice. Moreover, this research finds that 69% of companies have independent directors, which is in line with the recommended corporate governance guidelines.

Table 4 shows that the Big-4 audit firms are dominant (87% coverage) with an average tenure of 5 years with the same firm. Non-audit fees are also close to the audit fees in New Zealand, which indicates relatively less independence of auditors. The average non-audit fee is 87% of the audit fee over the sample period.

Table 4: Descriptive Analysis of CGI - Auditor

Details	BIG Four Auditor (Binary)	Auditor Tenure (Year)	Ratio of Non-Audit and audit fee
Mean	0.87	4.76	0.87
Median	1	4	0.40
Maximum	1	15	20.4
Minimum	0	1	0
Std. Dev.	0.34	2.95	1.60

Table 5 shows that 43% of companies have dual listing status, i.e. they are listed on the New Zealand and an overseas exchange. Table 5 also shows that the percentage of management ownership is 17.5% shareholding, whereas Ahmed et al. (2006) found only 6.9% of inside ownership. This indicates that insiders are getting more involved in New Zealand firms.

Table 5: Descriptive Analysis of CGI – Dual Listing and Management ownership

Details	Dual Listing Status (Binary)	Ratio of Management Shareholdings
Mean	0.44	0.17
Median	0	0.03
Maximum	1	4.14
Minimum	0	0.74
Std. Dev.	0.50	0.39

Tables 2, 3, 4 and 5 show the descriptive statistics of the corporate governance index for all sample years. The following table 6 shows the descriptive statistics of the determinants of the corporate governance variables.

Table 6: Descriptive Statistics of Governance Variable

Details	Corporate Governance Index	Regulation Dummy	NZX Listing Tenure	Operating Tenure	Log of Top-20 Shareholders	Log of Total Assets	Leverage
Mean	0.54	0.50	14.05	30.70	1.82	5.21	0.29
Median	0.50	0.50	10.00	18.00	1.85	5.16	0.25
Maximum	0.90	1.00	49.00	148.00	1.99	8.48	4.57
Minimum	0.25	0.00	1.00	1.00	1.33	2.91	0.00
Std. Dev.	0.12	0.50	11.70	34.29	0.13	0.96	0.33

Table 6 shows that average corporate governance compliance is 0.536, with the maximum compliance index of 0.90 and the minimum of 0.25. This implies that no company fully complied with the corporate governance regulations over the period of the study. The average listing tenure on the stock exchange was 14.052 years while the average age of the business was 30.704 years, indicating that companies are listing on the stock exchange a significant time after the business commenced operating.

2.6.2 Correlation Matrix:

Table 7 shows that all the independent variables, such as regulation dummy, NZX listing tenure, business operating tenure, natural log value of top-20 shareholders, and control variables, like natural log of total assets as proxy for business size, have a statistically significant positive correlation with the corporate governance index. This indicates that the firm has been operating for a long time in a regulated environment, with listed status on the stock exchange and concentrated ownership structure promoting stronger corporate governance compliance. Leverage has a statistically insignificant relationship with the corporate governance index. Moreover, the independent variables are free from strong correlation with each other, indicating that multi-collinearity is not a problem.

Table 7: Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Corporate Governance Index (1)	1												
Regulation Dummy (2)	0.14***	1											
NZX Listing Tenure (3)	0.12***	0.17***	1										
Business Operating Tenure (4)	0.09**	0.06	0.26***	1									
Log of Top-20 Shareholders (5)	0.24***	0.07*	-0.08*	-0.02	1								
Log of Total Assets (6)	0.46***	0.05	0.04	0.16***	0.15***	1							
Leverage (7)	0.01	0.06	-0.05	-0.16***	-0.09**	0.11***	1						
Service Sector (8)	0.15***	0.00	0.06	-0.18***	-0.28***	-0.40***	-0.06	1					
Primary Sector (9)	0.12***	0.00	0.05	0.21***	-0.12**	0.09*	-0.04	-0.17**	1				
Energy Sector (10)	-0.08**	0.00	-0.04	-0.11**	0.07	0.03	-0.05	-0.12**	-0.11*	1			
Goods Sector (11)	-0.18***	0.00	0.01	0.02	0.17***	0.08	0.18***	-0.16***	-0.14***	-0.10**	1		
Property Sector (12)	-0.17***	0.00	0.01	-0.11***	0.16**	-0.01	-0.01	-0.12***	-0.11**	-0.08*	-0.10**	1	
Investment Sector (13)	0.28**	0.00	-0.07	0.09**	0.23**	-0.19***	-0.02	-0.40***	-0.354	-0.26***	-0.33**	-0.24***	1

*** statistically significant at 1% level;

** statistically significant at 5% level;

* statistically significant at 10% level

2.6.3 Regression Analysis

Table 8 shows the regression analysis result of corporate governance and other variables using the Ordinary Least Square (OLS) method. To minimize the heteroskedasticity, White's cross-section least square was used, as most of the corporate governance indicators are identical and the tenure of NZX listing is relatively close to each other. Therefore, after minimizing the statistical error, the following results can be found.

Table 8 also shows that the model's adjusted R-squared statistic is 0.59 and its Fisher statistic significance at 1% level, indicating the explanatory power of the corporate governance index, considering above mentioned independent variables. The Regulation dummy has a positive impact, indicating regulatory environments have a positive impact on corporate governance. Moreover, the negative intercept being statistically insignificant shows that in the absence of regulation, compliance with corporate governance regulations was negative, indicating that firms are reluctant to comply without regulatory obligation. This indicates the rejection of H_01 , consistent with the argument that existence of regulation increases the compliance rate of corporate governance.

The New Zealand stock exchange listing act requires certain corporate governance criteria which indicates that listing status may increase compliance. Similarly, H_02 was rejected and found New Zealand stock exchange listing tenure also has a positive impact on corporate governance with a level of 1% statistical significance.

Table 8: Regression Analysis

Variables	Coefficient	t-Statistic
C	-0.21	-7.85
Regulation Dummy	0.03***	4.02
Listing Tenure	0.01***	5.2
Log of Top-20 Shareholder	0.20***	13.43
Operating Tenure	-0.01*	-1.55
Leverage	0.02	1.05
Log of Total Assets	0.05***	15.6
Primary Sector	0.11***	23.13
Energy Sector	0.10***	9.37
Goods Sector	0.11***	6.8
Property Sector	0.00	-0.2
Investment Sector	0.00	-0.53
R-squared	0.60	
Adjusted R-squared	0.59	
F-statistic	74.97	
Prob. (F-statistic)	0.00	
Durbin-Watson stat	1.95	
Observation	560	

*** statistically significant at 1% level;

** statistically significant at 5% level;

* statistically significant at 10% level.

Ownership concentration is significant with compliance of corporate governance at 1% level. Concentrated ownership (Top 20 shareholders) has a positive coefficient of 0.20 which indicates that concentrated ownership enhances compliance with corporate governance regulations, thus H_03 is rejected. It indicates that firms with more concentrated ownership tend towards increased regulation of corporate governance.

Business operating tenure has a negative impact on corporate governance, indicating that the level of compliance decreases with the age of company. So, the H_04 is rejected, suggesting that mature companies are not too concerned with complying with corporate governance regulations! Theoretically, a company needs to have robust systems of internal control and

corporate governance in order to reduce the cost of capital, but this research suggests that established companies are not worried about that.

Leverage has a positive coefficient of 0.02 with the corporate governance index, indicating that levered companies are more compliant with corporate governance regulations. However, leverage is not statistically significant at the 10% level. It seems that external loan providers have no influence on the level of compliance with corporate governance requirements. The other control variable of total assets also has a positive coefficient of 0.05 with the corporate governance index and a statistical significance level at 1%. It means that large firms with more assets are more compliant with corporate governance regulation.

Corporate governance regulations compliance in each of the sectors is also different. Among six sectors of companies, only three sectors; primary, energy and goods sectors are statistically significant at 1% level, whereas the property and investment sector does not indicate any significance. However, the intercept, or service sector, has a negative non-significant coefficient at less than 10% level.

The results of the multiple regression analysis on the effects of corporate governance regulation indicate that the F-statistic for the model is 74.97 and the p-value is significant with an adjusted R-squared of 0.59, demonstrating that the overall model has strong explanatory power. The Durbin-Watson statistic of 1.95 indicates that there is no strong evidence of first order correlation since, as a rule of thumb, any d-value (Durbin-Watson) less or equal to 2 indicates that no first order serial auto-correlation exists.

2.7 Conclusion

The main objective of this study was to measure the level of compliance of corporate governance with corporate governance regulations in New Zealand listed companies. Indeed, the study found that corporate governance regulations have impacted significantly on corporate governance compliance. Although the New Zealand corporate governance systems lag behind those of comparable countries, which may lead to a loss of confidence and a high tolerance of unfit directors (Farrar, 2005), it is suggested that compliance with the New Zealand Corporate Governance Principles and Guidelines will lead to the regaining of investor confidence. Although questions have been raised about the efficacy of the voluntary form of corporate governance regulation, this research shows that compliance with such

regulations has increased. The increase in the level of compliance has resulted in an increase in investor confidence as well as company performance (Bhuiyan, Roudaki, & Clark, 2009; Brennan & McDermott, 2004; Prevost, Rao, & Hossain, 2002; Weir, Laing, & McKnight, 2002) .

The findings show that the existence of corporate governance regulations has a positive influence on corporate governance practice. Further, firm specific characteristics like NZX listing tenure and ownership concentration also have an influence on corporate governance. Business operation tenure was found to have an insignificant relationship to corporate governance compliance over the pre and post-regulation regime. Considering four specific characteristics, business operating tenure was found not to be significant but corporate governance regulation, New Zealand Stock Exchange listing tenure, and ownership concentration, were positively significant to governance compliance. In essence, this research supports the contention that the existence of a regulatory framework will increase the quality of corporate governance.

Chapter 3

Corporate Governance Compliance and Discretionary Accruals: A comparative analysis of New Zealand companies⁵

3.1 Introduction

This chapter documents the association between corporate governance compliance and performance matched free cash flow discretionary accruals. Free cash flow (FCF) is the accumulation of cash flow from operating and investing activities and includes all cash flows relating to property, plant and equipment and investment in the balance sheet. It has been suggested that free cash flow is better matched with earnings (Dechow & Ge, 2006), and there is a considerable body of literature that defines total accruals as the difference between net income and cash flow from operating activities (Dechow, Sloan, & Sweeney, 1995; Xie, Davidson, & DaDalt, 2003). This traditional approach has been extended by Dechow & Ge (2006) who define total accruals as the difference between earnings and free cash flow. Recent research studies have used the free cash flow approach to accruals measurement (Bukit & Iskandar, 2009).

Opportunities for earnings management are higher with the increase of free cash flow in business and, in the absence of proper monitoring of management; the risk that money might be misused by investing in less profitable projects is increased. Research studies on corporate governance and earnings management suggest that better corporate governance measures such as having independent directors, supervisory committees (such as the audit committee, nomination committee and remuneration committee), and quality external audits, can reduce opportunistic behaviour by management.

Cash flow is an important basis for accrual measurement (Ingram & Lee, 2007). Prior literature on earnings management focused on identifying and expanding the set of variables

⁵ This Chapter provided the basis for a paper that was co-authored with Dr. Jamal Roudaki and Murray Clark, and was presented at a conference on Asian Academic Accounting Association,, Thammasat Business School, Bangkok, Thailand, November 28 – December 1, 2010.

that influence discretionary accruals, using cash flow from operating activities (Leuz, Nanda, & Wysocki, 2003; McNichols & Wilson, 1988; Richardson, Sloan, Soliman, & Tuna, 2005; Siregar & Utama, 2008; Xie et al., 2003). However, free cash flow has not been considered when calculating total accruals in previous studies. As stated above, free cash flow is the combination of cash flow from operating activities and investing activities, which reflects the impact of cash spending on fixed assets and investments. Companies operating with high free cash flow provide greater opportunities for opportunistic behaviour by management. Therefore it is appropriate to suggest that free cash flow better reflects accruals for individual firms.

General findings from research indicate that discretionary accruals are affected by corporate governance factors such as the composition of the board of directors, CEO duality, the composition of the audit committee, and auditor independence (Bukit & Iskandar, 2009; Klein, 2002, 2003; Larcker et al., 2007; Richardson et al., 2005; Romano, 2005; Siregar & Utama, 2008). Firm specific characteristics such as firm size, leverage and profitability have also been documented as determinants of discretionary accruals. Companies operating for a long period of time are expected to have improved corporate governance practices (Fasterling, 2005). Stakeholders, therefore, get the benefits of better monitoring activities. This chapter extends earlier research studies by incorporating company age and stock exchange listings as determinants of earnings management. Furthermore, this chapter also argues that a company operating for a long time under listing status reduces earnings management.

The chapter proceeds as follows: section 3.2 gives an overview of earnings management models, and section 3.3 presents a literature review of earnings management and corporate governance. Hypotheses are developed in section 3.4. Section 3.5 and 3.6 explain the sampling process used and the research methodology followed. In section 3.7, univariate and multivariate analyses are discussed, which leads to section 3.8, the conclusion of the chapter.

3.2 Earnings Management Models

Earnings management is measured by accrual changes, change of accounting methods and change of capital structure (Jones, 1991). Most of the influential earnings management models are based on total accruals. The advantage of the accruals approach is that it can potentially reveal the subtle income-reducing techniques that managers have incentives to

employ since such techniques are less subject to detection by outsiders (DeAngelo, 1986). However, the total accruals measure has an important limitation: total accruals include both discretionary accruals and non-discretionary accruals, and if non-discretionary accruals are large relative to total accruals then discretionary accruals are a poor proxy for the extent of income manipulation by managers. Non-discretionary accruals can be large and systematically negative, even in the absence of income manipulation. Thus total accruals less than zero could generate an erroneous inference that managers had deliberately understated earnings. However, total accruals can validly be negative if depreciation was a major expense (DeAngelo, 1986). The following summarises the well-recognised models of earnings management.

3.2.1 The Healy Model

Healy (1985) found earnings management by comparing average total accruals, scaled by lagged total assets. Total accruals are the proxy for discretionary accruals in his model. Total accruals are the difference between reported accounting earnings and cash flow from operations. Non-discretionary accruals are not zero, but total accruals are equal to discretionary accruals plus non-discretionary accruals. The mean total accruals from the estimation period then represent the measure of non-discretionary accruals. Healy (1985) developed an empirical approach that used the firm's operating cash flows as a proxy for what earnings would have been in the absence of managerial income manipulation.

3.2.2 The DeAngelo Model

DeAngelo (1986) tests for earnings management by computing the first difference in total accruals. She examined the accounting decisions made by managers and found that managers of the sample firms had incentives to manage earnings. The DeAngelo model calculates normal accruals as the previous period's accruals deflated by lagged assets. The DeAngelo model found marginally better accrual evidence than the Healy (1958) model due to serial correlation of sales innovation (Ronen & Yaari, 2007)

3.2.3 The Jones Model

Jones' (1991) accruals on event study implies that firms do not manage earnings before the event and relaxed the assumption of constant non-discretionary accruals. She included gross property, plant and equipment and the changes in revenue to control for changes in non-discretionary accruals, while total accruals are considered as a change of working capital

accounts. The regression calculated three coefficients for reciprocal of assets, revenue accruals, and fixed asset accruals, and, notably, the expected sign of each coefficient is different. Property, plant and equipment is negative because it determines depreciation expense. The coefficient for the change of sales would be positive as changes in accounts receivable and accounts payable are related. Since the sales of a profitable firm exceeds expenses, the net working capital would be positive if the credit policy of the firm and suppliers are the same (Ronen & Yaari, 2007). For example, assume that the sales of a firm were made only in cash but a few purchases were on credit. Accounts payable would increase as sales increased, so the coefficient of change in sales is negative. The Jones model was developed from a small sample which increases the chance of type II error (i.e. erroneously accepting the null hypothesis that earnings management does not take place), but to some extent, small samples are unavoidable due to low observation trends (Ronen & Yaari, 2007).

3.2.4 Modified Jones Model

Dechow, Sloan and Sweeney (1995) established a total accruals model by considering the treatment of accounts receivable. They designed the modification to eliminate the conjectured tendency of the Jones Model to erroneously measure discretionary accruals when discretion is exercised over revenues. In the Modified Jones model, non-discretionary accruals are estimated during the event period

The estimates of coefficients of accruals and non-discretionary accruals during the estimation period are those obtained from the original Jones Model with the sole adjustment relative to that model being the change in receivables. The Modified Jones Model implicitly assumes that all changes in credit sales in the event period results from earnings management (Dechow et al., 1995). In cross section analysis, the change in the accounts receivable is subtracted from the change in revenues for the estimation of the parameters of normal accruals (Ronen & Yaari, 2007).

3.2.5 Forward-Looking Model

The forward-looking model was established by Dechow, Richardson and Tuna (2003) by combining three innovations: discretionary and non-discretionary accruals separation in credit sales, control of lagged accruals, and control of growth. In the first innovation, the Modified Jones Model assumes all sales in each period are discretionary and induces a positive correlation between discretionary accruals and current sales growth (Dechow et al.,

2003). The second innovation was to include lagged accruals in the model since some proportion of accruals can be predicted based on last year's accruals (Dechow et al., 2003). Finally, the Forward-Looking Model included future sales growth because a growing firm, in anticipation of future sales, will rationally increase inventory balance. Thus the increase in inventory does not result from a management decision not to write-off obsolete inventories. The Jones Model classified an increase in inventory as earnings management while the Forward-Looking Model measures future growth pattern (Dechow et al., 2003). Dechow et al. (2003) measure growth of sales as the change in sales from the current year to the next year, scaled by current sales. Young firms are characterized by high growth and by high normal accruals (McNichols, 2000), so failure to take account of these features might lead to erroneously classifying non-discretionary and discretionary accruals. McNichols (2000) found discretionary accruals on the rate of returns on assets together with the growth variable yield a significant positive association between discretionary accruals and growth.

3.2.6 Performance Matching Model

Kothari, Leone and Wasley (2005) develop a performance-matching model which includes an intercept with the deflated lagged assets to mitigate heteroskedasticity. They find that having return on assets in the regression equation reduces discretionary accruals when they expect the null hypothesis of no earnings management to hold. This model has become quite popular because it yields stronger results than the Jones model (Ronen & Yaari, 2007).

3.3 Literature Review

The thread of earnings management essentially commenced in 1985 with the publication of Healy's research, closely followed by DeAngelo's research in 1986. Both of them focused on total accruals and changes in accruals as a measure of discretionary acts by management in order to manage earnings. Healy (1985) found that accrual policies of managers are related to bonus incentives in their employment contracts. However, DeAngelo (1986) found sharp contrast with Healy (1985), each of whom used accrual methodology and each of whom found evidence of income manipulation in a different setting. DeAngelo calculated non discretionary accruals based on lagged total accrual whereas Healy measured earnings based on comparing means of total accruals scaled by total assets. Both of these researchers did not separate out non-discretionary factors – this first occurred when Jones (1991) used a linear regression approach and controlled for non-discretionary accrual factors including sales revenue and property, plant and equipment.

A different approach to earnings management research was introduced by McNicols and Wilson (1988) who focussed on specific accruals within industry settings. McNicols and Wilson (1988) modelled earnings management on a single accrual factor, the provision for bad debts, instead of collective factors of accruals using Generally Accepted Accounting Principles (GAAP). Moyer (1990) examines the incentives for commercial bank managers to adjust accounting measures used by regulators and legislators. Petroni (1992) investigates the extent to which the biased application of accounting discretion by managers of property/casualty insurers affects the estimation error in claim loss reserves, finding that managers of financially weak insurance companies bias estimates of claim loss reserves downwards relative to financially strong insurers.

The behaviour of earnings around a specified benchmark is another approach to earnings management research. Burgstahler and Dichev (1997) provide evidence that earnings management occurs in order to avoid reporting decreases in earnings or losses. It has also been suggested that earnings management occurs in order to report positive profit, sustain recent performance, and meet analysts' forecasts, in that order (Degeorge, Patel, & Zeckhauser, 1999).

Dechow, et al. (1995) introduced the Modified Jones model, which has become one of the most widely-used models in earnings management research. The Modified Jones model includes an adjustment to sales based on the change in the amount of receivables. Whereas the Jones model implicitly assumes that discretion is not exercised over revenue in either the estimation period or the event period, the Modified Jones model assumes that all changes in the credit sales in event period result from earnings management (Dechow et al., 1995). The Jones model focused on the manipulation of bad debt expenses but underestimates managed earnings when sales are manipulated. In contrast, the Modified Jones model overestimates the magnitude of earnings management (Ronen & Yaari, 2007).

The following five sub-sections survey the relevant literature on regulation and corporate governance indicators related to earnings management.

3.3.1 Regulation and Earnings Management

Regulation is an important determinant of earnings management. Both voluntary and mandatory regulations increase disclosures to shareholders, reduce information asymmetry, and reduce managerial discretionary power to manage earnings. Disclosure of information

reduces the cost of capital and provides higher earnings quality (Francis, Nanda, & Olsson, 2008). A weak legal environment might facilitate opportunistic earnings management, which results in lower earnings quality. Although soft regulations strengthen the rights of minority shareholders, they cannot rely on the courts as legal processes remain slow and ineffective (Ball, Kothari, & Robin, 2000). They also found that earnings management is inversely related to the strength of the regulation and litigation environment.

Stock market authorities have become increasingly anxious about the implementation of corporate governance regulations following many high profile corporate collapses and accounting manipulations that have occurred in recent years. Corporate governance regulations were introduced following the Cadbury Report in 1992 and, more recently, tightened in the Sarbanes-Oxley Act 2002, but recent literature suggests that corporate governance regulations are irrelevant and competing regulators implement irrespective of necessity (Romano, 2005). Nonetheless, this flow of regulation allows regulators to facilitate better policy and allows flexibility to the organizations as one code does not fit all sectors and companies.

3.3.2 Board of Directors and Earnings Management

Generally Accepted Accounting Principles (GAAP) requires firms to use accrual accounting, but this also allows management to control the timing of accrual expenditures (Xie et al., 2003). However, it is over to the board of directors to monitor and control these discretionary acts of management. Independent outside directors provide a measure of protection against this agency problem (Weisbach, 1988), so it is expected that the composition of the board will be a factor that influences the extent to which a company engages in earnings management since independent outsider directors monitor management more effectively than inside directors (Vafeas, 2000; Xie et al., 2003). Unfortunately, non-executive directors may not act as good monitors if they have a significant financial interest in the company (Luan & Tang, 2007; Peasnell, Pope, & Young, 2005; Tosi, Shen, & Gentry, 2003), they have other directorships that compete for their time (i.e. they are too busy), they have limited time to devote to the affairs of the company, or they owe their positions to existing management and therefore their loyalty is more to that management than to the company (Hart, 1995). A large board may include a number of independent directors, but this may also result in greater bureaucracy and less functionality than a board that is numerically smaller. Nevertheless, a

large board with more independent directors is better positioned to prevent earnings management (Xie et al., 2003).

3.3.3 Board Committees and Earnings Management

Vance (1983) argues that the audit committee, the compensation committee and the nomination committee all have significant influence on corporate activities while Klein (2003) argues that the overall composition of the board of directors has no influence on firm performance, but that the audit committee does. It is therefore likely that the structure of board committees and their composition will impact management's willingness to manage earnings. Xie et al. (2003) argue that the executive committee only plays an indirect role whereas the audit committee has a more direct role in controlling earnings management.

Consequently, an active, well-structured and properly functioning audit committee may be able to reduce if not eliminate earnings management. It is therefore expected that professionally efficient audit committee members will play a significant role in preventing earnings management, and that an audit committee comprising a large proportion of independent directors will ensure effective monitoring. This expectation is in line with the recommendations of Levitt's Blue Ribbon Panel (Xie et al., 2003). The Cadbury Report (1992) also suggests that the audit and remuneration committee should be comprised mainly or entirely of non-executive directors.

3.3.4 Auditor and Earnings Management

Prior research also shows that auditor and audit quality play an important role regarding the control of earnings management (Balsam, Krishnan, & Yang, 2003; Siregar & Utama, 2008; Teoh & Wong, 1993). They also argue that the Big 4 auditors have greater independence from the client as compared to non Big 4 auditors. Companies audited by Big 4 firms have less discretionary accruals than others because the auditors play a significant role in constraining opportunistic earnings management behaviour. However, the auditor's ability to be independent is influenced by the incentives they receive, and a recent study has investigated whether non-audit services compromise auditor independence or whether the consequences are that the auditor allows pernicious earnings management (Cahan, Emanuel, Hay, & Wong, 2008; Habib & Islam, 2007).

3.3.5 Ownership Concentration, Securities Exchange Listing and Earnings Management

Management stockholding reduces agency conflicts because they are both a principal (since they are shareholders in their own right) and an agent (for the other shareholders). It is therefore expected that this dual role should result in a lower incidence of earnings management. Previous studies have found a negative relationship between management shareholding and the absolute value of abnormal accruals (Warfield, Wild, & Wild, 1998). Healy (1985) found that CEO's tend to manage earnings to maximise their bonus while Klein (2002) found CEO shareholdings to be no predictor of earnings management. Institutional ownership provides wider monitoring and greater control of firm information and reduces earnings management (Hermes, Postma, & Zivkov, 2007; Siregar & Utama, 2008).

3.4 Hypothesis Development

Five hypotheses are developed in order to test the association between corporate governance and discretionary accruals.

3.4.1 Regulations and Earnings Management

The basic premise of capitalism is that individuals pursue their own interest (Smith, 1776). Appropriate corporate laws and regulations are vital for the efficient working of a capitalistic economy in order to maximise individual and national wealth. There is a widespread belief that only strict laws and regulatory controls can prevent management acting for their own self-interest (Drobetz, 2002). However, an appropriate legal structure may help to protect investors and their investments, and also ensures a 'proper' environment that generates a return on investment. Corporate governance regulations should lead to improved systems of internal control within companies. Leuz, Nanda and Wysocki (2003) examined systematic differences of earnings management and found a negative relationship between corporate governance regulations and the level of earnings management. Leuz et al. (2003) argue that insiders have incentives to conceal their private control benefits from outsiders.

Prior research also found that financial disclosure practices have a positive impact on investor confidence, reduce information asymmetry, and result in a lower cost of capital (Francis et al., 2008). Similarly, corporate governance and other regulations help management to structure strong internal control systems and monitor shareholders' interest. Tightening rules

and regulations and the adoption of self regulation by market participants, are the result of the growing conviction that better corporate governance will deliver higher shareholder value (Bartle & Vass, 2007; Drobetz, 2002). Increased regulation enhances strong corporate governance, and together with a more independent and effective board of directors and board committees, leads to a reduction in managerial discretionary decisions resulting in earnings manipulation. The first regulation-related hypothesis, expressed in the null form is therefore:

H_01 : There is no relationship between the presence of corporate governance regulations and discretionary accruals.

3.4.2 Corporate Governance Compliance and Earnings Management

An effective and efficient board of directors is the prime component in a system of corporate governance. However, if the board is dominated by executive directors, the opportunity to indulge in ‘discretionary financial decisions’ will be greater than if the board was dominated by independent directors. Similarly, CEO duality, where the CEO is also the chair of the board of directors, further creates an environment that enables discretionary decisions concerning the management of earnings. It is suggested that the use of appropriate board committees such as an audit committee, remuneration committee, and a nomination committee, will act to reduce discretionary managerial decisions. For example, having at least one independent director with financial expertise on the audit committee will enhance the level of corporate governance, which, in turn, should reduce discretionary accruals. Similar arguments can be mounted for having independent directors on the remuneration committee (since they will then be able to rationalise the remuneration and incentives offered to management), and on the nomination committee (to remove the possibility of nepotistic appointments).

The results of empirical research suggest that outside directors are able to more effectively monitor and reduce agency costs, which results in lower discretionary accruals (Jiang, Lee, & Anandarajan, 2008; Klein, 2002; Vance, 1983). Similarly, effective and independent board committees are expected to monitor internal control systems better. All of these attributes of best practice generally form part of a robust set of corporate governance regulations, so compliance with these regulations should strengthen the level of corporate governance. This leads to the following null hypothesis related to corporate governance compliance:

H_02 : There is no relationship between the level of compliance with corporate governance regulation and discretionary accruals.

3.4.3 Control Shareholding and Earnings Management

A zero-based agency cost indicates that the firm is owned by a single owner-manager. Agency costs exist when ownership is separated from management, i.e. when the manager holds less than 100 percent of the equity. Agency costs increase with the reduction in the proportion of managerial ownership. Companies that operate with a controlling shareholder have less independent decision-making compared to companies where there is no controlling shareholder, since the controlling shareholder has access to information and, by definition, controls the activities and decisions of the board of directors (Varma, Patel, & Naidu, 2009).

Minority shareholders have little or no influence on board decisions, and may feel insecure when the corporate environment is not regulated. Independent management have better control over decision-making if the shareholding is scattered among many owners. Therefore, a non-mandatory corporate governance regulatory environment may not be sufficient to protect minority shareholders. This leads to the following null hypothesis concerning a controlling shareholder:

H_03 : There is no relationship between the presence of a controlling shareholder and discretionary accruals.

3.4.4 Business Operation Tenure and Earnings Management

A company operating in society is expected to have a robust system of internal control and to comply with relevant regulations (Kole & Lehn, 1997). As discussed previously, effective systems of controlling and monitoring management lead to a reduction in discretionary accruals. It can be argued that a mature company that has been operating for a period of time will have such systems in place, and that its stakeholders will be actively monitoring the financial position of the business. This argument is supported, at least in part, by prior research which provides evidence that growing and newly established firms have more discretionary accruals than mature firms (McNichols & Wilson, 1988; Shen & Chih, 2007). However, all firms, irrespective of maturity, could manage their earnings – for example, Dechow & Dichev (2002) show that longer operating cycles generate greater uncertainty, give rise to more estimation errors, and result in lower quality of accruals. Thus the evidence

regarding the relationship between the maturity of the company and earnings management is mixed. The current research will provide further evidence about this relationship, so the fourth null hypothesis is as follows:

H_04 : There is no relationship between business operating tenure and discretionary accruals.

3.4.5 Listing Tenure and Earnings Management

The New Zealand Stock Exchange Listing Rules and the Corporate Governance Best Practice Code 2004 both provide criteria with which listed companies must or should (respectively) comply. Compliance with these criteria should result in an environment whereby opportunities for earnings management will be limited. It is therefore expected that the longer a company has been listed, the more likely they will have a lower level of discretionary accruals. Hypothesis five, expressed in the null form, is therefore:

H_05 : There is no relationship between the listing tenure of a company and discretionary accruals.

In essence, the hypothesis posits that a regulated environment of corporate governance will reduce discretionary accruals by imposing more accountable and effective monitoring systems.

3.5 Sample

The sample of companies for this study is selected from companies listed by the New Zealand Stock Exchange Limited (NZX). The NZX comprises two markets: the New Zealand Stock Market (NZSE) (the main board) where premium equities are traded, and the New Zealand Alternative Market (NZAX) which lists companies that are comparatively new and, typically, in a rapid growth phase. The latter market allows these young companies to issue equities comparatively cheaply as compared to the main board. It should be noted that corporate governance research in New Zealand has not previously included the NZAX companies because this board is a recent addition to the market. The inclusion of the NZAX should therefore add depth to the previous studies of corporate governance in New Zealand.

The sample period covers the years from 2000 to 2007, inclusive. To be included in the sample, companies must have operated over the entire period of the study. By the end of August, 2008 a total of 153 companies were listed by NZX. Consistent with previous

research, twenty nine finance companies were excluded since they are subject to different regulations and reporting procedures. Thirty five companies did not provide a complete set of financial reports usable for this research while financial information about nineteen companies was not available.

Corporate governance information such as the composition of the board of directors, the board committees, and audit information was collected manually from IRG Ltd's deep archive section while financial data was collected from DATASTREAM. Company websites also provided information about operating cycles and the length of time that the company had been listed on the stock exchange. The final sample of seventy companies was then divided into different industry sectors using the NZX categories, as follows:

Table 9: Sector composition of sample

Sector Group	Companies	Observation	Percentage
Energy	8	64	11.43%
Goods	11	88	15.71%
Investment	5	40	7.14%
Primary	9	72	12.86%
Property	5	40	7.14%
Service	32	256	45.72%
Total	70	560	100%

3.6 Research Methodology

This section describes the research methodology, including the measurement of the research variables and the statistical techniques and other models used in this research.

3.6.1 Measurement of Variables

This section describes how the dependent and independent variables were measured and how discretionary accruals were calculated.

3.6.1.1 Measure of Dependent Variable

Discretionary accruals were measured using Jones Model (1991), the Modified Jones Model (1995) and the Performance Matched Model (Kothari, 2005). Free cash flow was used to measure the performance matched model as follows:

$$\frac{NDA_{ip}}{A_{ip-1}} = \alpha_0 + \alpha_i \left[\frac{1}{A_{ip-1}} \right] + \beta_{1i} \left[\frac{\Delta REV_{ip} - \Delta AR_{ip}}{A_{ip-1}} \right] + \beta_{2i} \left[\frac{PPE_{ip}}{A_{ip-1}} \right] + \delta_1 ROA_{ip-1} \dots \dots (2)$$

Where:

Total Accruals = Net Income before extraordinary items less Free Cash Flow which includes cash flow from operating activities and cash flow from investing activities

α_0 = constant

ΔREV_{ip} = revenue in year t less revenue in year p-1 for firm

ΔAR_{ip} = receivables in year t less receivables in year t-1 for firm i

PPE_{it} = gross property, plant and equipment in year t for firm i

A_{it-1} = total assets in year t-1 for firm i

i = individual firm

p = period

ε_{it} = error term in year t for firm i

NDA_{ip} = non-discretionary accruals

ROA_{ip-1} = lagged rate of return on assets

3.6.1.2. Measure of Independent Variables

3.6.1.2.1 Regulation

The regulation effect will be measured by a dummy variable since it is anticipated that corporate governance regulations will enhance corporate governance compliance and reduce opportunistic behaviour of management. The opportunistic behaviour of management is indicated by discretionary accruals, so, for the years 2000-2003, the regulation dummy variable will be '0' to indicate the existence of discretionary accruals when there were no regulations, otherwise the regulation dummy variable will be '1'. It is expected that there will be a negative correlation between the regulation dummy variable and discretionary accruals.

3.6.1.2.2 Corporate Governance Index (CGI)

A Corporate Governance Index (CGI) was prepared for each company using the approach specified in chapter 2.

3.6.1.2.3. *Control Shareholding*

If one entity holds at least half of the issued shares, they are considered to have the controlling shareholding of the company. Companies having a more concentrated ownership are more likely to have higher discretionary accruals as compared to companies with less concentrated ownership. The controlling shareholder has access to more information and, by definition, can control the company's governance processes and internal control systems. This variable will be coded '1' if the company has a controlling shareholder, '0' otherwise. It is expected that there will be a positive relationship between this variable and discretionary accruals.

3.6.1.2.4 *NZX Listing Tenure*

Companies that are listed on the stock exchange are subject to higher monitoring by investors and regulators. It is expected that all stakeholders would access news releases from the company as and when they occur, which suggests that it would be more difficult for such companies to have discretionary accruals. It is posited that the longer a company has been listed, the less likelihood that there will be discretionary accruals. It is expected that there will be a negative relationship between this variable and discretionary accruals.

3.6.1.2.5. *Operating Tenure*

Company operating age and discretionary accruals have an inconclusive relationship. Older companies are expected to have stable internal control mechanisms which should lead to lower discretionary accruals. However, a company that is in its early phase of its life is always likely to have more discretionary accruals than a mature company. Thus it is posited that as the age of business operation increases the possibility of discretionary accruals decreases. On the other hand, it can be argued that companies that have been in the market for a long time may not be too concerned about the reaction of the market to news about the existence of discretionary accruals. In this case there would be a positive association between the age of the company and discretionary accruals.

3.6.1.3. *Measurement of Control variables*

3.6.1.3.1 *Leverage*

Leverage indicates business risk in terms of external financing. A company with more leverage indicates higher debt contribution in terms of its financial structure. A firm that has

higher leverage is more likely to have higher discretionary accruals in order to manage their external financing and to show a better asset structure with higher revenue performance. Leverage is therefore considered a control variable in the multivariate equation (Bradbury, Mak, & Tan, 2006).

3.6.1.3.2 *Return on Assets (ROA)*

Return on assets is the indicator of financial performance of an organisation as it reflects how effectively and efficiently the resources are being utilised. It is expected that companies with higher ROA have lower discretionary accruals, and that there will be a negative relationship with discretionary accruals.

3.6.1.3.3 *Firm Size*

Controlling for firm size is common in earnings management research. It is expected that a large firm will have relatively higher discretionary accruals compared to a small firm since a large firm generally will have diversified or decentralised management decision-making. A diversified decision-making process leads to higher discretionary accruals for business. It is expected that there is a positive relationship between firm size and discretionary accruals.

3.6.1.4 *Sector Dummy Measure*

To evaluate the business sector effect, a sector dummy variable was considered to be relevant. Following the NZX index categories, all samples were divided into 6 different sectors to obtain representative samples for each sector. The sectors are: service, primary, energy, goods, property and investment. From these sectors, the service sector was used as the intercept for regression analysis to avoid the dummy variable trap (Gujarati, 2003). Information existing on the same sector is categorised as '1' and otherwise '0' for sector dummy.

3.6.2 Multivariate Regression Model

Considering all above explanatory variables the following general multivariate regression model was prepared:

$$DAC_{it} = \varphi_1 + \varphi_2 \text{Reg_Dummy}_{it} + \varphi_3 CGI_{it} + \varphi_4 (CGI_{it} * \text{Reg_Dummy}_{it}) + \varphi_5 \text{ContShr}_{it} + \varphi_6 \text{NZXListTen}_{it} + \varphi_7 \text{OperatingTen}_{it} + \varphi_8 \text{Leverage}_t + \varphi_9 \text{ROA}_{it} + \varphi_{10} \text{TA}_{it-1} + \varphi_{11} \sum_{11}^{15} \text{Sector_Dummy}_{it} + \xi_{it} \dots \dots \dots (2)$$

Where,

- DAC_{it} = Discretionary Accruals (Jones Model, Modified Jones Model, Performance Matched Model, Performance Matched Free Cash Flow Model);
- Reg_Dummy_{it} = Regulation Dummy;
- CGI_t = Corporate Governance Index in year t;
- ContShr_t = Control Shareholding in year t;
- NZXListTen_t = NZX Listing Tenure in year t;
- OperatingTen_t = Operating Tenure in year t;
- Leverage_t = Leverage in year t;
- ROA_t = Return on Assets in year t;
- TA_{t-1} = Total Assets in year (t-1) as a proxy of firm size;
- $\sum_1^5 \text{Sector_Dummy}_t$ = Sector Dummy for 1, 2 ... 5;
- φ = Coefficient of respective variables 1, 2 ... 15;
- i = Individual firm;
- t = Year; and
- ξ = Error term.

This model was used for all the measurements of discretionary accruals calculation in the next section. Discretionary accruals are the dependent variable used to measure managerial opportunistic behaviour impact on earnings.

3.7 Results

The objective of this chapter was to investigate the effect of corporate governance regulations on managerial accruals (discretionary accruals) in New Zealand listed companies. First the results of descriptive statistics are presented then, in the following sections, results of correlation analysis; abnormal accruals and multivariate analysis are illustrated.

3.7.1 Descriptive Statistics

The descriptive statistics for the key variables are presented in table 10. This table shows a descriptive analysis pre and post regulation, including the total sample of different variables. Average discretionary accruals for Jones Model, Modified Jones Model, Performance Matched Model and Performance Matched Free Cash Flow Model different models are close to zero, implying the average descriptive statistics of discretionary accruals did not provide any concrete evidence. Total accruals were mainly captured by sales and fixed assets like property plant and equipment scaling. Discretionary accruals were captured on the unexplained variable of the regression which descriptive statistics evidenced with the value consistent in all the models of accrual measure. Average corporate governance compliance increased from 0.52 to 0.55 as a regulatory impact. The average operating tenure of business is 28 years whereas average listing tenure, significantly less at 12 years, implies that firms take time to list on the stock exchange after incorporation. The average listing years indicates that firms listed in the capital market at the growth level of business.

Table 10: Descriptive Analysis

Details	Mean			Median			Standard Deviation		
	Pre-Regulation	Post-Regulation	All Sample	Pre-Regulation	Post-Regulation	All Sample	Pre-Regulation	Post-Regulation	All Sample
Discretionary Accruals – Jones Model	-0.001	0.001	0.001	0.006	0.019	0.012	0.268	0.141	0.214
Discretionary Accruals – Modified Jones Model	-0.005	0.018	0.00648	0.007	0.018	0.0136	0.278	0.140	0.22053
Discretionary Accruals – Performance Matched Model	0.001	0.000	0.000	-0.009	0.002	-0.00385	0.196	0.122	0.16268
Discretionary Accruals – Performance Matched Free Cash Flow Model	0.001	0.000	0.000	0.099	0.178	0.141	1.800	1.666	1.733
Regulation Dummy	0.000	1.000	0.5	0.000	1.000	0.5	0.000	0.000	0.5
Corporate Governance Index (CGI)	0.519	0.554	0.536	0.500	0.550	0.5	0.120	0.126	0.124
CGI * Regulation Dummy	0.000	0.554	0.277	0.000	0.550	0.15	0.000	0.126	0.291
Listing Tenure	12.057	16.046	14.052	8.000	12.000	10	11.505	11.558	11.693
Operating Tenure	28.700	32.707	30.704	16.000	20.000	18	34.265	34.261	34.291
Return on Assets	0.058	0.087	0.072	0.096	0.100	0.099	0.426	0.321	0.377
Total Assets (t-1)	2706993	1741694	2224343	120109	192802	145571.5	18895582	6008815	14016282
Primary Sector	0.000	0.157	0.079	0.000	0.000	0.000	0.000	0.365	0.269
Energy Sector	0.000	0.129	0.064	0.000	0.000	0.000	0.000	0.335	0.245
Goods Sector	0.000	0.071	0.036	0.000	0.000	0.000	0.000	0.258	0.186
Property Sector	0.000	0.114	0.057	0.000	0.000	0.000	0.000	0.319	0.232
Investment Sector	0.000	0.071	0.036	0.000	0.000	0.000	0.000	0.258	0.186

Table 11: Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Jones Discretionary Accruals (1)	1	0.987**	0.745	-0.201*	0.062	-0.079*	0.051	-.007	0.032	-0.002	-0.028	.323**	0.010	-0.024	0.014	0.017	0.036	-0.012
Modified Jones Discretionary Accruals (2)		1	.738**	-.191**	0.054	-.087*	0.043	-0.016	0.024	0	0.02	.369**	0.01	0.022	0.014	0.017	0.039	-0.004
Performance Matched Discretionary Accruals (3)			1	-.259**	0.00	-0.026	-0.01	-0.028	0.013	-.108*	0.042	0.005	-0.019	0.039	-0.035	-0.02	-0.036	0.032
Free Cash Flow Discretionary Accruals (4)				1	0.00	-.109**	-0.032	0.043	0.018	.216**	-.124**	-0.009	0.016	.126**	0.033	0.000	-0.001	0.064
Regulation Dummy (5)					1	.140**	.952**	0.028	.171**	0.058	0.062	0.039	-0.034	0.000	0.000	0.000	0.000	0.000
Corporate Governance Index (6)						1	.351**	0.005	.119**	.089*	0.002	-.163**	-0.002	-.152**	.116**	-.084*	-.184**	-.171**
Interaction of CGI and REGDUMMY (7)							1	0.026	.182**	0.072	0.031	0.015	-0.04	-0.026	0.027	-0.01	-0.041	-0.036
Controlling Shareholdings (8)								1	-.108*	0.021	-.151**	-0.028	.097*	-.089*	-.104*	-.108*	.183**	-.170**
NZX Listing Tenure (9)									1	.258**	-0.052	-0.045	-.095*	0.063	0.053	-0.004	-0.009	-0.004
Business Operating Tenure (10)										1	-.164**	0.043	.112**	-.180**	.214**	-.113**	0.023	-.112**
Leverage (11)											1	0.021	-0.025	-0.056	-0.038	-0.045	.176**	-0.012
Return On Assets (12)												1	0.014	-.095*	0.067	0.064	.149**	0.037
Total Assets (13)													1	-0.053	.160**	-0.02	-0.015	-0.027
Primary Sector (14)														1	-.166**	-.120**	-.155**	-.120**
Energy Sector (15)															1	-.107*	-.138**	-.107*
Goods Sector (16)																1	-.100*	-0.077
Property Sector (17)																	1	-.100*
Investment Sector (18)																		1

*** Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

* Correlation is significant at the 0.10 level (2-tailed)

3.7.2 Correlation Analysis

Correlation analysis was conducted to find the relationship strength among independent and dependent variables. Table 11, the Correlation Matrix, shows all the models of total accruals measurement and independent variable relationships. None of the independent variables have steady unique correlation with discretionary accruals in all models. The Jones model has significant correlation with the corporate governance index ($r = -0.079$ at the 10% level) and return on assets ($r = 0.323$, at the 1% level). The modified Jones model is correlated with the same variables as corporate governance index ($r = -0.087$) with 5% level of significance and return on assets ($r = 0.369$) with 1% level of significance. In both cases, the corporate governance index has a negative relationship with discretionary accruals, indicating that better corporate governance practice reduces discretionary accruals as a proxy of earnings management.

Companies' performance as ROA having a positive relationship with discretionary accruals indicates that higher performing companies show statistically significant higher discretionary accruals. McNichols (2000) also claims that Jones and Modified Jones Models of discretionary accruals have positive relationships with ROA. The performance matched discretionary accruals model is correlated with business operating tenure ($r = -0.108$) only. Finally, the free cash flow discretionary accruals model correlated with the corporate governance index ($r = -0.109$), business operating tenure ($r = 0.216$), leverage ($r = -0.124$) and primary sector ($r = 0.126$) at 5% level of significance. The correlation coefficient was checked for higher collinearity among regressors. It can be seen from the correlation matrix that there is no high correlation among variables. As a result, collinearity is no threat to the independence of regression reported in the following sections.

3.7.3 Abnormal Accruals

This section explains the overall accruals measurement and explanatory power of Performance Matched Free Cash Flow Model Three other established accruals measurement models were also calculated to compare with our model (Performance Matched Free Cash Flow Model) in explaining coefficients. Table 12 shows the explanatory power of all models.

Table 12: Coefficient of accruals model

Models	Adjusted R²	Intercept	Total Assets Reciprocal	Revenue Coefficient	Property Plant and Equipment Coefficient	ROA coefficient
Jones Model	0.204 (48.861)***	-922.871 (-8.856)***	0.03 (8.974)***	0.019 (1.803)**	-	-
Modified Jones Model	0.201 (48.014)***	-925.144 (-8.859)***	0.03 (8.840)***	0.02 (1.880)**	-	-
Performance Matched Model	0.316 (65.429)***	0.025 (1.846)*	-859.579 (-8.578)***	0.029 (9.298)***	-0.034 (-2.688)**	0.282 (9.592)***
Performance Matched Free Cash Flow Model	0.228 (42.193)***	-0.355 (-3.121)**	-8762.579 (-10.223)***	0.006 (0.239)*	-0.008 (-0.072)	1.709 (6.792)***

* Correlation significant at the 0.10 level (2-tailed)

** Correlation significant at the 0.05 level (2-tailed)

*** Correlation significant at the 0.01 level (2-tailed)

Table 12 shows that the Jones Model (1991) and Modified Jones Model (1995) both have almost 20% explanatory power of at the 1% significant level. Moreover, all the determinants are statistically significant as total assets reciprocals and revenue coefficients. The performance matched model (2005) has 31.6% explanatory power at 1% level of significance. The determinants of the performance matched model; total assets reciprocal, revenue coefficient, property plant and equipment coefficient and ROA coefficients are statistically significant. Finally, the performance matched free cash flow model has 22.8% explanatory power with 1% level of significance. Performance matched free cash flow model determinants such as total assets reciprocal, revenue coefficient and ROA coefficient are statistically significant, except property plant and equipment is significant at more than the 10% level of significance.

Table 13, shows the signs of regression for each of the variables in all models. Following basic accrual measurement process, *revenue* and *fixed assets* measurement is the key to calculating non-discretionary accruals. The coefficient of change in sales is positive because the sales of a profitable firm exceed its expenses and the net working capital will be positive if the credit policies of the firm and suppliers are similar. Conversely the coefficient on property, plant and equipment is negative because it determines the depreciation expenses (Ronen & Yaari, 2007).

Table 13: Regressor's Sign & Coefficients on Each of the Model and Variables

Details	Expected Sign	Jones Model	Modified Jones Model	Performance Matched Model	Performance Matched Free Cash Flow Model
Total Accruals	+/-	(Positive: 222; Negative: 338)	(Positive: 218; Negative: 342)	(Positive: 219; Negative: 341)	(Positive: 270; Negative: 290)
Reciprocals of Assets Coefficient	?	-	-	-	-
Revenue & Receivables Coefficient	+	+(Positive: 390; Negative:170) = 30.36%	+(Positive: 409; Negative:151) = 26.96%	+ (Positive: 391; Negative:169) = 30.18%	+(Positive: 390; Negative: 170) = 30.36%
Property, Plant and Equipment Coefficient	-	+	+	-	-
Performance Indicator (ROA) coefficient	?	Not Applicable	Not Applicable	+ (Positive: 458; Negative: 102) = 18.21%	+(Positive: 458; Negative: 102) = 18.21%

Table 13 shows that 30.36% of individual regressors (revenue receivables coefficient –‘ve 170) have negative values in the Jones Model and the overall coefficient is positive as expected, whereas Jones (1991) found in 39% of the regressions the coefficient of change in sales are negative. Similarly, the Modified Jones (1995) Model has 26.96% and the Performance Matched (Kothari et al., 2005) Model has 30.18% negative change in sales coefficients. The Performance Matched Free Cash Flow Model also shows 30.36% of sales coefficients are negative, which is comparatively stronger than the Jones Model, Modified Jones Model and Performance Matched Model. Property, plant and equipment was expecting a negative coefficient, however, the Jones and Modified Jones Model both found positive coefficients with accruals unlike the Performance Matched and Performance Matched Free Cash Flow model. This change is a significant improvement in the Performance Matched Free Cash Flow Model and evidenced that higher returns on assets generate higher income changing accruals. The performance indicator coefficient, ROA, shows 18.21% of negative individual regressors with positive coefficients, which indicates profit increasing accruals.

3.7.4 Multivariate Analysis

This section presents the results of multivariate regression for all the significant methods of the study, including expected coefficient directions of variables. Jones’ model is the pioneer of accruals calculation, followed by the Modified Jones model, where our analysis found that, among all variables, the Modified Jones model has more significant effects on NZX listing tenure, business operating tenure and Return on Assets (ROA), with the R^2 value marginally higher in the Modified Jones Model (20.6%) compared to the Jones Model (19.8%) for these variables. The Fisher test shows both models are significant at a 1% level with acceptable levels of Durbin-Watson value reflecting no auto correlation in the model. As a rule of thumb, a Durbin-Watson test value lower than 2 is an acceptable level of auto correlation in the model.

Table 14: Multivariate Analysis of the determinant of Discretionary Accruals

Variables	Jones Model	Modified Jones Model	Performance Matched Model	Performance Matched Free Cash Flow Model
C	0.006 (0.274)	0.015 (0.708)	0.022 (0.197)	0.147 (0.0828)
Regulation Dummy	0.004 (0.155)	-0.005 (.182)	0.021 (0.861)	0.523 (2.501)**
Corporate Governance Index	-0.043 (-1.230)	-0.054 (-1.527)	-0.038 (-1.178)	-0.757 (-2.42)***
Corporate Governance Index * Regulation Dummy	0.020 (0.434)	0.031 (0.688)	-0.033 (-0.769)	-0.701 (-1.800)*
Control Shareholder	-0.003 (-0.430)	-0.005 (-0.760)	-0.005 (-0.879)	0.360 (5.925)***
Listing Tenure	0.001 (2.885)***	0.001 (2.456)**	0.001 (3.712)***	-0.005 (-2.300)**
Operating Tenure	-0.001 (-3.012)***	-0.001 (-2.905)***	-0.001 (-5.70)***	0.005 (4.496)***
Leverage	0.006 (0.459)	-0.001 (-0.038)	0.017 (1.338)	0.028 (0.257)
Return on Assets	0.208 (9.036)	0.233 (9.609)***	0.021 (1.178)	-0.588 (-3.878)***
Total Assets (t-1)	0.000 (1.103)	0.000 (1.086)	0.000 (-0.250)	0.000 (0.120)
Primary Sector Dummy	-0.004 (-0.344)	-0.002 (-0.179)	-0.018 (-1.954)*	0.454 (5.668)***
Energy Sector Dummy	-0.004 (-0.519)	-0.005 (-0.643)	-0.006 (-0.745)	0.270 (3.158)***
Goods Sector Dummy	0.003 (0.246)	-0.001 (-0.092)	-0.027 (-2.199)**	0.315 (3.020)***
Property Sector Dummy	-0.003 (-0.308)	-0.004 (-0.398)	-0.018 (-2.113)**	-0.025 (-0.289)
Investment Sector Dummy	-0.030 (-2.299)	-0.028 (-0.917)*	-0.010 (-1.027)	0.290 (2.884)**
R-squared	0.198	0.206	0.116	0.171
Adjusted R-squared	0.177	0.186	0.093	0.149
S.E. of regression	0.197	0.199	0.159	1.429
F-statistic	9.597	10.119	5.115	8.000
Prob(F-statistic)	0.000	0.000	0.000	0.000
Durbin-Watson stat	1.327	1.292	1.547	1.711

* Correlation significant at the 0.10 level (2-tailed)

** Correlation significant at the 0.05 level (2-tailed)

*** Correlation significant at the 0.01 level (2-tailed)

Sample companies were categorised by 6 sectors, therefore 5 sector dummy variables are used in analysis. Only the service sector has no dummy to avoid the dummy variable trap which is the situation of perfect collinearity (Gujarati, 2003). In other words, (φ_1) represents the intercept of the service sector and φ_{11} , φ_{12} , φ_{13} , φ_{14} , and φ_{15} , are the differential intercept coefficients reflecting the intercept of other sectors (Goods, Primary, Property, Energy and Investment).

Performance Matched Model regression found NZX listing tenure, Operating tenure, Goods, Property and Energy sector are statistically significant. This model has comparatively lower R^2 with a predictive value of 11.6% at the 1% significance level. Moreover, a Durbin-Watson test value of 1.547 indicates no auto correlation in the model.

Finally, the Performance Matched Free Cash Flow Model shows relatively higher significance of variables⁶. The coefficient of regulation dummy for the Jones Model, Modified Jones Model, Performance Matched Model and Performance Matched Free Cash Flow Model is respectively 0.004, -0.005, 0.021 and 0.523. Of all the models, The Performance Matched Free Cash Flow Model has significance at the 5% level. As mentioned above, regulations have a positive impact on earnings management and H_0I is not rejected for the Jones Model, Performance Matched Model and Performance Matched Free Cash Flow Model. However, the Modified Jones model alone shows a negative coefficient. It indicates that the existence of regulation reduces earnings management opportunity. In other words, a more regulated company environment minimizes the opportunistic behaviour of management.

Firms with higher corporate governance compliance have reduced opportunistic management attitudes which ensure higher accountability and reporting quality (Aguilera, 2005; Sinha, 2006). The coefficients of the corporate governance index for the Jones Model, Modified Jones Model, Performance Matched Model and Performance Matched Free Cash Flow Model are -0.043, -0.054, -0.038 and -0.757 respectively. The entire set of coefficients indicates a negative association of the corporate governance index with discretionary accruals; indicate higher compliance of corporate governance reduces managerial accruals. Performance Matched Free Cash Flow Model has statistical significance at 1% level. The interaction

⁶ Bradbury et al. (2006) found adjusted $R^2 = 0.075$ to 0.089 at the 1% level of significance using different specifications of Modified Jones Model (1995).

coefficient of the corporate governance index and regulation dummy (Corporate Governance Index * Regulation dummy) shows an expected negative association for both the Performance Matched Model and Performance Matched Free Cash Flow Model as -0.033 and -0.701 (at 10% level of significance); however, the Jones Model and Modified Jones Model have positive coefficients of 0.020 and 0.031 with more than a 10% level of significance. Compliant corporate governance ensures independent boards, audit processes and strong internal control systems which reduce managerial discretion. H_02 is thus rejected and indicates that higher corporate governance compliance with regulation reduces discretionary accruals. In summary, H_01 and H_02 , results indicate that the existence of corporate governance regulation alone does not reduce managerial opportunistic behaviour but regulation with higher compliance of corporate governance does reduce managerial discretion.

The coefficient for Control Shareholdings in the Performance Matched Free Cash Flow Model is calculated as 0.360, statistically significant at a 1% level. However, the coefficient for the Jones Model, Modified Jones Model and Performance Matched Free Cash Flow Model is calculated as -0.003, -0.005 and -0.005 respectively, at more than a 10% level of statistical significance. The positive association of discretionary accruals and control shareholdings is consistent with the rejection of H_03 , suggesting that concentrated ownership holds significant control over management incurring discretionary accruals (Bradbury et al., 2006). Control shareholders have significant influence in selecting directors and CEOs of firms which indirectly influence managerial discretion.

The coefficients of firm operating tenure for the Jones Model, Modified Jones Model, Performance Matched Model and Performance Matched Free Cash Flow Models are -0.001, -0.001, -0.001 and 0.005 respectively. Firm operating tenure is statistically significant at the 1% level for each of the models. Firms operating for longer terms having higher discretionary accruals were supported in rejecting H_04 .

The coefficient of the Jones Model, Modified Jones Model, and Performance Matched Models for listing tenure is 0.001 each while the Performance Matched Free Cash Flow Models shows 0.005. Moreover, stock exchange listing tenure is statistically significant at a 5% level for both the Modified Jones Model and Performance Matched Free Cash Flow Model, and similarly, at a 1% level of significance for the Jones Model and Performance

Matched Model. As argued, stock exchange listing tenure has statistically significant negative associations in the performance matched model rejected H_0 .5.

Performance indicator Returns on Assets has a negative coefficient of -0.588 for the Performance Matched Free Cash Flow Model with 1% level significance and the Modified Jones Model has a coefficient of 0.233 at that level. However, the Jones Model and Performance Matched Model do not have any statistical significance with discretionary accruals. The negative association indicates that high performance reduces managerial discretion: managers are still de-motivated when they meet targeted performance. However, leverage and firm size do not show any statistical significance at the 10% level.

Among NZX listed companies; primary, energy and goods sectors show statistical significance at a 1% level in the Performance Matched Free Cash Flow Model. Similarly, the Investment sector shows a 5% level of significance in the same Model. The Performance Matched Model shows significance in the primary sector at a 10% level; goods and property sector returns a 5% level of significance. The Modified Jones Model indicates a 10% level of significance for the investment sector only. However, none of the sectors result in statistical significance for the Jones Model. Therefore, compared with four measures of discretionary accruals, the Performance Matched Free Cash Flow Model reflects more significance in a sectoral analysis of managerial discretion. Finally, the existing interaction between corporate governance and regulation suggest a negative coefficient, as expected. This implies that existing regulations enhance corporate governance compliance that subsequently reduces discretionary accruals.

3.8 Conclusions and Remarks

This chapter expands the stream of earnings management model using discretionary accruals, implementing free cash flow and documenting that firms demonstrating higher compliance of corporate governance have relatively lower discretionary accruals. The free cash flow measure is one of the very few observable inputs available in discretionary accruals models. Earnings management literature evidenced that accruals models are suitable for explanation using cash flow type operating activities. The results depict corporate governance compliance increasing the accountability of management and reducing financial discretion in decision making. Moreover, New Zealand Stock Exchange listed companies are compelled to follow corporate governance regulation and provide better monitoring of earnings with consequently lower discretionary accruals. Discretionary accruals reduce relatively in growing firms and

those in the initial stage of operation. Managerial discretion reduces as corporate governance regulation compliance increases and minimizes discretionary accruals. This chapter finds evidence consistent with the proposition that firms complying with corporate governance regulation have more efficient monitoring compared to low compliance firms.

An additional contribution of this chapter is to determine that a regulated environment of corporate governance reduces managerial opportunistic behaviour. Moreover, the evidence shows the ‘comply or explain’ nature of soft regulation is effective in New Zealand and that it reduces managerial discretionary accruals. The findings of this chapter are beneficial for not only New Zealand corporate governance legislators but for other countries in developing or restoring corporate governance guidelines.

Chapter 4

The Effect of Corporate Governance Regulations on Firm Value: New Zealand Evidence⁷

4.1 Introduction

This chapter contributes to the corporate governance and firm value literature by documenting the associations between corporate governance regulation, managerial discretion and firm valuation in New Zealand. Firm value can be defined as an economic measure that reflects the market value of the whole business. It is the aggregate of claims of the debt holders, preference stockholders, and common stockholders. Firm value is also a performance measure that compares book and market value. Understanding the effect of corporate governance regulations on firm value is important because it effects, inter alia, the opportunistic behaviour of management as well as the decision-making process used by investors. Further, it is posited that investors would prefer a regulated environment because it offers some level of protection to their investments (Clark, 2004; LaPorta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). Prior literature suggests that corporate governance does have a positive impact on firm value as measured by Tobin's Q (Gompers, Ishii, & Metrick, 2003), and the price-to-book ratio (Garay & Gonzalez, 2008).

A consequence of the corporate collapses that occurred in the late 20th and the early 21st centuries is that legal forms of corporate governance, and regulations that can be characterised as a 'comply or explain' type of regulation are commonly found in many countries. The short term and long term effects of these corporate governance 'codes' is not clear, and this chapter provides evidence that these types of corporate governance regulations will reduce discretionary actions by management in the short term and will maximise firm value in the long term.

Using a sample of seventy companies that were listed on the New Zealand Stock Exchange (NZX) over the period 2000 to 2007, this study finds evidence consistent with the hypothesis that firms have a high level of compliance with corporate governance regulations have higher value to investors, i.e. a higher firm value.

⁷ This Chapter forms the basis of a paper that was co-authored with Dr. Jamal Roudaki and Murray Clark, and was presented at a conference on '22nd Asian Pacific Conference on International Issues'; Bond University, Gold Coast, Australia, November 7-9, 2010.

Corporate governance is measured based on the 'Corporate Governance Best Practice Code 2003', the 'Principles and Guidelines of Corporate Governance 2004' and the 'Companies Act 1993' indicates better monitoring and internal control systems ("Corporate Governance Best Practice Code," 2003; Corporate Governance in New Zealand Principles and Guidelines," 2004). One stream of research on corporate governance suggests that governance mechanisms reduce managerial discretionary accruals. Another stream of research documents that implementing corporate governance guidelines/rules leads to an increase in firm performance. This chapter employs three different measures of firm value, (Tobin's Q, Price-to-Book ratio and Enterprise Value), and four different discretionary accruals models (Jones model, Modified Jones model, Performance Matched model, and Performance Matched Free Cash Flow model) to establish the effect on firm value.

4.2 Literature Review

The classic argument of agency theory is that the separation of owners and managers leads to information asymmetry between the parties. To control opportunistic behaviour by managers, several external control mechanisms are available, such as externally imposed regulations and the appointment of independent directors. Regulatory agencies impose regulations to mitigate the agency problem, but voluntary mechanisms as typified by the 'comply or explain' nature of corporate governance practices may not be as effective as mandatory regulations. Following this argument, the literature reveals evidence that weak or voluntary regulations may not be sufficiently strong to protect the investment made by, and achieve the objectives of, investors (Farrar, 2005). However, investor protection is reduced in the absence of any form of regulatory control irrespective to the nature of regulations.

Fasterling (2005) argues that investor confidence will also increase when the stock market is regulated, even when compliance with those regulations is voluntary as compared to mandatory. The 'comply or explain' nature of voluntary regulation creates an implicit competition among companies to attract investors in their stock. Companies can convey a positive signal to the public if investors are aware that they have adopted a recognised code of practice regarding corporate governance (Fasterling, 2005). Therefore, better compliance with a code of corporate governance leads to better terms for the investor confidence (Doidge, Karolyi, & Stulz, 2007) which in turn, leads to an environment where investors are willing to pay more than market price for stock in order to achieve a lower risk on investment. However,

the literature of corporate governance and firm valuation in respect of voluntary regulation is inconclusive (Anderson & Gupta, 2009).

The regulatory system of an economy has a strong influence on the corporate governance system. A regulated environment ensures relatively more protection for investors (LaPorta et al., 2000), and firms that operate in better legal regimes rely more on external financing to fund their growth (LaPorta, Florencio, Andrei, & Robert, 1997). Investor protection encourages the development of financial markets since protected investors pay more for securities thereby increasing the attractiveness of securities as an investment (LaPorta et al., 2000). LaPorta et al. (1997) show that countries with protected shareholders have more valuable stock market. Both “insider” shareholders, i.e. minority shareholders and controlling shareholders (La Porta et al., 2000), have significant power with respect to the control mechanisms within the firm. However, the effect of voluntary regulation, especially a ‘comply or explain’ corporate governance code, arguably leads to better monitoring of management. It is well established that state laws of corporate governance affect firm value (Gompers et al., 2003).

Black, Jang and Kim (2006) prepared a corporate governance index using 515 Korean companies based on a 2001 Korean Stock Exchange survey. They categorised their corporate governance index using five different dimensions and by using ordinary least squares regression analysis, found 47% prediction of corporate governance indices with Tobin’s Q as a proxy of firm value and about 160% increase in share price. Gompers et al. (2003) constructed a ‘Governance Index’ using 24 corporate governance rules as a proxy of shareholders rights for a sample of 1500 large firms. They found that firms in the highest decile of the index with the highest level of managerial power meant weak shareholder rights – these were categorised as being in the ‘Dictatorship Portfolio’. Similarly, the strongest shareholder rights were observed to be in firms at the lower deciles of their index – these were categorised as being in the ‘Democracy Portfolio’.

Firm performance or firm value (Black et al., 2006; L. Brown & Caylor, 2006; L. D. Brown & Caylor, 2004; Gompers et al., 2003) is one of the major research stream in regulation of corporate governance and consequences. Black et al. (2006) focused on few dimension of those consequences. *First*, high value firms tend to adopt good governance practices as compared to low value firms. *Second*, firms may endogenously choose different governance practices. *Third*, firms may adopt good governance rules to signal that the firm’s insiders will

behave, but it is the signal, not the governance practices, that affects share prices. *Finally*, they concerned with omitted variable bias as economic variable may ignore and come in wrong conclusion of corporate governance effects on firm's value.

Firms operating for long signalling business stability and moderate governance practice. Development process of firm improved during the process of operation and firm understood their own strength and weakness (Jovanovic, 1982). However, matured firms have more spread of operation and complexity which increase agency costs. Younger firms have fast growing potentiality rather than older firms (Black et al., 2006). The listing status of firm, which indicates managerial confidence about the future prospects for the firm, also indicates better monitoring on behalf of shareholders, which is reflected in the stock price. (Sanger & McConnell, 1986). However, a relatively new firm may not have the same impact on investors. Black et al., (2006) evidenced a negative coefficient because younger firms are likely to be fast growing and be intangible asset-intensive.

Regulation and investor protection have been shown to have a positive relationship by many research studies (Black et al., 2006; Gompers et al., 2003; LaPorta et al., 1997; LaPorta et al., 2000). Strong regulations concerning corporate governance tend to result in greater compliance practices by firms. A 'one size fit all' approach to regulation may not suit all the firms in the economy and as the variation increases the legal environment gets less investor friendly (Durnev & Kim, 2005). Consistent with previous research, Durnev and Kim (2005) found a positive statistical relationship with governance and disclosure practices related to growth opportunities. For growth, firms need more external financing and concentration on cash flow. Such positive relations are stronger in countries with weak legal frameworks. Moreover, they argue that good investment opportunities provide more incentives to improve governance practices among firms in countries with a weak legal environment, and finally, the quality of governance and disclosure practices are positively related to firm valuation and this relationship is weaker in a strong legal environment.

4.3 Hypothesis Development

The question "does good corporate governance practice affect the value of a firm" reflects the consequence of effective corporate governance. In two earlier chapters, corporate governance practice was posited as not only the contribution of having regulations. In order to exist, companies must have a minimum level of governance in place, but having regulations provides a safer environment for investors. Following major corporate collapses in late the

20th and early 21st centuries, many countries have introduced or enhanced existing regulations and/or guidelines concerning corporate governance. These will not prevent corporate collapses from occurring in the future, but they should provide a more secure capital market as a result of better systems of corporate governance. Prior studies provide evidence that an effective system of corporate governance is positively related to investor protection (Durnev & Kim, 2005; LaPorta et al., 2000).

A significant number of empirical studies have focused on understanding the relationship between corporate governance and ownership concentration (Davies, Hiller, & McColgan, 2005), board of director independence (Orr, Emanuel, & Wong, 2005), the effectiveness of various board committees, and managerial compensation. The results of these studies have not been conclusive because of differences between countries due to different economic conditions and differing legal environments (Maher & Anderson, 1999). Recent studies have also focussed on the relationship between corporate governance and firm performance (Black et al., 2006; Gompers et al., 2003).

Agency theory posits that managers are motivated to perform better in order to enhance their own position, usually by way of compensation or bonus plans that are based on reported accounting numbers. It is therefore logical to argue that managers may use discretionary accounting policies to manage their earnings in order to meet targeted net income (or some other targets) that acts as a threshold to gaining enhanced remuneration. In a competitive and well-structured capital market, investors are well aware that this may be happening, and therefore will factor this into stock market prices (Cornell & Landsman, 2003). It can therefore be concluded that stock market prices will be affected when investors are provided with information about discretionary policies used by management.

Previous literature documents that strong and effective systems of internal control will enhance firm value. Chhachharia and Grinstein (2007) demonstrate that corporate governance does have an economic impact on the firm, and conclude, interestingly, that firms that are less compliant with the rules have greater firm value as compared to more compliant firms. Moreover, they found that board independence and internal control have no effect on small firms but they do for large firms because they experience greater benefits if they comply with the rules. To mitigate the agency problem previously discussed, firms can introduce more effective monitoring of management by having outside directors on the board (Fama & Jensen, 1983). Independent boards have more monitoring power as compared to boards that

are dominated by ‘insiders’. Outside directors are also likely to enrich the board because they may come from diverse backgrounds and bring different experiences to the boardroom. Orr et al. (2005) shows that the proportion of outsider directors for high growth firms is positively related to firm value. They included tenure of director, directors’ equity ownership, outside involvement of directors and proportion of non-executive directors as attributes in their study.

The above discussion suggests that firms with a high proportion of independent directors, appropriate monitoring committees and efficient external auditors will have an effective system of monitoring managerial activity. A high level of monitoring reduces opportunistic behaviour of managers and provides greater confidence to investors, which, in turn, has a positive effect on the value of the firm. Hence, the null hypothesis tested is as follows:

H₀1: There is no relationship between compliance with corporate governance regulations and firm value.

4.4 Research Methodology

The sample of this study is the same as that used in the previous sections.

4.4.1 Measuring Dependent Variables

To investigate the effect of corporate governance regulation compliance on firm value, the following equation (equation 3) is used. Ordinary least squares regression is used for analysis based on balanced panel data which pools the observation cross sectional and overall effect.

$$FV = \varphi_0 + \varphi_1 REGDUMM + \varphi_2 CGI + \varphi_3 DAC + \varphi_4 REGDUMM * CGI * DAC + \varphi_5 CNTLSHR + \varphi_6 NZXLISTTEN + \varphi_7 OPERTEN + \varphi_8 SIZE + \varphi_9 LEVERAGE + \varphi_{10} ROA + \varphi_{11} \sum_{11}^{15} SECTDUMM + \phi \dots \dots (3)$$

Where,

FV = Firm Value (measured in Tobin's Q, Price to Book ration and Enterprise Value)

REGDUMM = Regulation dummy of 1 for corporate governance regulation otherwise 0;

CGI = Corporate Governance Index (comprehensive corporate governance indicator with 20 different items categorized under Board Composition, Board Committee, Auditing and Managerial Ownership & Dual Listing;

DAC = Discretionary Accruals of Net Income Measured with Jones Model (1991), Modified Jones Model (1995), Performance Matched Model (2005) and Performance matched Free Cash Flow model;

*REGDUMM*CGI*DAC* = Interacting variable of regulation dummy, corporate governance and discretionary accruals;

CNTLSHR = Control Shareholding (Single shareholders holding more than 50% share are coded as 1 and 0 otherwise;

NZXLISTTEN = New Zealand Stock Exchange Listing Tenure;

OPERTEN = Operating tenure of firm;

SIZE = Total Assets as a proxy of business size;

LEVERAGE = Company leverage;

ROA = Return on Assets;

SECTDUMM = Sector Dummy;

ϕ . = Error term.

Firm value can be defined as the economic value of firm which the market forces are ready to pay. Previous literature suggests different measures of firm value, with Tobin's Q and the

Price-to-Book ratio being the most common. Theoretically, enterprise value (EV) is also a strong measure of firm value, and this has been considered in this study as well. The following sections discuss these three measures.

4.4.1.1 Tobin's Q:

The first definition of Firm Value (FV) in this research is as indicated by Tobin's Q formula. Chung and Pruitt (1994) argue that this formula provides a strong prediction of the replacement value of the firm. Tobin's Q is based on the hypothesis that the combined market value of all the companies on the stock market should be equivalent to their replacement costs. It compares total outstanding equity and debt in market value to the total assets at book value. Tobin's ratio less than 1 indicates that stock is undervalued, and in this situation firms have little incentive to invest because the value of new capital investment falls below its costs. Conversely, a Tobin Q ratio more than 1 indicates that stock is overvalued and firms would have a strong incentive to invest because the value of new capital investment would exceed costs. Noteworthy research was conducted based on Tobin's Q to predict firm value and found a significant relationship between corporate governance regulation and firm value (Black et al., 2006; Garay & Gonzalez, 2008). Tobin's Q is calculated as follows:

$$Tobin's\ Q = \frac{CS + PS + TD}{TA}$$

Where, CS = Common Stock at market value;

PS = Preferred stock at market value;

TD = Total Debt;

TA = Total Assets at book value.

4.4.1.2 Price-to-Book ratio (P-B ratio):

The second definition of Firm Value (FV) which is considered relevant to the objectives of this study is the price-to-book ratio (P-B ratio) which compares book value of the firm to the market value. A higher P-B ratio indicates that investors expect management to create more value from a given set of business assets. However, a low P-B ratio may also indicate a good investment opportunity. The P-B ratio may become meaningless for high tech companies because most of the assets are hidden (intangible) in these types of firms. Some prior research has used the P-B ratio as a measure of firm value (Garay & Gonzalez, 2008; Leal & Carvalhal-da-Silva, 2005). The formula for this ratio is:

$$Price - Book\ ratio = \frac{CS + PS}{Equity}$$

Where,

CS = Common Stock at market value;

PS = Preferred stock at market value;

4.4.1.3 Enterprise Value:

The third definition of firm value used in this study is Enterprise Value (EV). Theoretically, enterprise value is more representative than other measures of firm value because it provides a much more accurate estimate of the value of the firm since it is based on a takeover value. Enterprise Value is calculated as follows:

$$\text{Enterprise Value} = (\text{Market Value of Equity} + \text{Market Value of Debt} - \text{Cash Holding})$$

Enterprise values are collected from DataStream (item no # 307). This study investigates the effect that corporate governance regulation has on enterprise value.

Considering the three different variables that measure firm value, the following models are used to satisfy the objectives of this research.

$$\begin{aligned} \text{Tobin's } Q &= \varphi_0 + \varphi_1 \text{REGDUMM} + \varphi_2 \text{CGI} + \varphi_3 \text{DAC} + \varphi_4 \text{REGDUMM} * \text{CGI} * \text{DAC} + \varphi_5 \text{CNTLSHR} \\ &+ \varphi_6 \text{NZXLISTTEN} + \varphi_7 \text{OPERTEN} + \varphi_8 \text{SIZE} + \varphi_9 \text{LEVERAGE} + \varphi_{10} \text{ROA} + \varphi_{11} \sum_{11}^{15} \text{SECTDUMM} \\ &+ \phi \dots \dots \dots 3(a) \end{aligned}$$

$$\begin{aligned} \text{Price} - \text{Book ratio} &= \varphi_0 + \varphi_1 \text{REGDUMM} + \varphi_2 \text{CGI} + \varphi_3 \text{DAC} + \varphi_4 \text{REGDUMM} * \text{CGI} * \text{DAC} + \\ &\varphi_5 \text{CNTLSHR} + \varphi_6 \text{NZXLISTTEN} + \varphi_7 \text{OPERTEN} + \varphi_8 \text{SIZE} + \varphi_9 \text{LEVERAGE} + \varphi_{10} \text{ROA} \\ &+ \varphi_{11} \sum_{11}^{15} \text{SECTDUMM} + \phi \dots \dots \dots 3(b) \end{aligned}$$

$$\begin{aligned} \text{EV} &= \varphi_0 + \varphi_1 \text{REGDUMM} + \varphi_2 \text{CGI} + \varphi_3 \text{DAC} + \varphi_4 \text{REGDUMM} * \text{CGI} * \text{DAC} + \varphi_5 \text{CNTLSHR} \\ &+ \varphi_6 \text{NZXLISTTEN} + \varphi_7 \text{OPERTEN} + \varphi_8 \text{SIZE} + \varphi_9 \text{LEVERAGE} + \varphi_{10} \text{ROA} + \varphi_{11} \sum_{11}^{15} \text{SECTDUMM} \\ &+ \phi \dots \dots \dots 3(c) \end{aligned}$$

Where,

- REGDUMM* = Regulation dummy of 1 for corporate governance regulation otherwise 0;
- CGI* = Corporate Governance Index (comprehensive corporate governance indicator with 20 different items categorized under Board Composition, Board Committee, Auditing and Managerial Ownership & Dual Listing;
- DAC* = Discretionary Accruals of Net Income Measured with Jones Model (1991), Modified Jones Model (1995), Performance Matched Model (2005) and Performance based Free Cash Flow model;
- CNTLSHR* = Control Shareholding (Single shareholders holding more than 50% share are coded as 1 and 0 otherwise;
- NZXLISTTEN* = New Zealand Stock Exchange Listing Tenure;
- OPERTEN* = Operating tenure of firm;
- SIZE* = Total Assets as a proxy of business size;
- LEVERAGE* = Company leverage;
- ROA* = Return on Assets;
- SECTDUMM* = Sector Dummy;
- ϕ . = Error term.

4.4.2 Measuring Independent Variables

To measure the effect of firm value the following independent variables were also considered.

4.4.2.1 Corporate Governance Index

A Corporate Governance Index (CGI) was prepared for each company using the approach specified in chapter 2

4.4.2.2 Discretionary Accruals

The amount of total accruals is the difference between net income and the cash flow from operating activities. Total accruals can be divided into discretionary accruals and non-discretionary accruals. Discretionary accruals arise due to management decisions, and this is used as the independent variable in our model. Discretionary accruals were measured based on the Jones Model (Jones, 1991), the Modified Jones Model (Dechow et al., 1995), the Performance Matched Model (Kothari et al., 2005), and the Performance Matched Free Cash Flow Model (PBFCF model). The total accruals for the PBFCF model is the difference between net incomes and free cash flow where free cash flow is the sum of cash flow from

operating activities and cash flow from investing activities (Dechow & Ge, 2006). Discretionary accruals were calculated based on following equations:

Jones Model:

$$TA_{it} / A_{it-1} = \alpha_i \left[\frac{1}{A_{it-1}} \right] + \beta_{1i} \left[\frac{\Delta REV_{it}}{A_{it-1}} \right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}} \right] + \varepsilon_{it}$$

Modified Jones Model:

$$NDA_{\tau} = \alpha_1 \left(\frac{1}{A_{\tau-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{\tau} - \Delta REC_{\tau}}{A_{\tau-1}} \right) + \alpha_3 \left(\frac{PPE_{\tau}}{A_{\tau-1}} \right)$$

Performance Matched Model:

$$\frac{NDA_{ip}}{A_{ip-1}} = \alpha_0 + \alpha_i \left[\frac{1}{A_{ip-1}} \right] + \beta_{1i} \left[\frac{\Delta REV_{ip} - \Delta AR_{ip}}{A_{ip-1}} \right] + \beta_{2i} \left[\frac{PPE_{ip}}{A_{ip-1}} \right] + \delta_1 ROA_{ip-1}$$

Performance Matched Free Cash Flow Model:

$$\frac{NDA_{ip}}{A_{ip-1}} = \alpha_0 + \alpha_i \left[\frac{1}{A_{ip-1}} \right] + \beta_{1i} \left[\frac{\Delta REV_{ip} - \Delta AR_{ip}}{A_{ip-1}} \right] + \beta_{2i} \left[\frac{PPE_{ip}}{A_{ip-1}} \right] + \delta_1 ROA_{ip-1}$$

Where,

TA = Total Accruals;

A = Total Assets;

ΔREV = Change of Revenues;

PPE = Property Plant and Equipment;

NDA = Non discretionary accruals;

ΔREC (or ΔAR) = Change of accounts receivables;

ROA = Return on Assets;

t= time;

α = coefficients;

β = coefficients.

4.4.2.3 Control Shareholding

If one entity or an individual holds at least half of the issued shares, they are considered to have the control shareholding of the company. Clearly if the controlling shareholder owns less than 100% of the share, there must be a minority shareholding. The control shareholder has a dominant position on the board and can control board activities, board decisions, and access to information. It is expected that there would be a negative relationship between control shareholding and firm value.

4.4.2.4 Firm Operating Tenure

The fact that a firm has been operating for a long period of time suggests that the business has experienced stability (in relative terms) and growth. New firms tend to be in a 'high growth' phase whereas older firms tend to have a more stable market capitalization. However, old firms also tend to have relatively old management which introduces delays in the decision making processes (Faleye, 2007). It is expected that there will be a negative relationship between firm operating tenure and firm value.

4.4.2.5 NZX Listing Tenure

NZX listing tenure is the number of years that the firm has been listed on the New Zealand Stock Exchange. It is expected that there is a positive relationship between long term listing status and investor confidence.

4.4.3 Control Variable

Following previous studies, e.g. (Black et al., 2006; Gompers et al., 2003) total assets is used as a proxy of firm size. It is expected that a large firm will generate more opportunities to increase the value of that firm because there are more investment opportunities and easier for a large firm as compared to a small firm. Also, a firm with higher leverage will have more monitoring by external parties, which should lead to an increase in firm value. Leverage has also been considered by previous research (Black et al., 2006).

4.5 Empirical Results

As previously stated, the objective of this study is to measure the effectiveness of corporate governance regulations in New Zealand. Empirical results are presented in descriptive, correlation and regression formats in the following sections.

4.5.1 Descriptive Analysis

This section presents the descriptive statistics of dependent and all the independent variables except dichotomous variables and sector dummies. The descriptive analysis was conducted on the data before transformation.

Table 15: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Tobin's Q	0.07	30.88	1.83	2.49	7.18	70.25
Price to Book Value	-1550.98	97.49	-2.32	72.12	-18.65	387.03
Enterprise Value	-1939.00	96312500.00	2935398.41	12524589.28	5.69	31.99
Corporate Governance Index	0.25	0.90	0.54	0.12	0.31	-0.51
Jones Discretionary Accruals	0.00	2.88	0.10	0.19	8.12	98.14
Modified Jones Discretionary Accruals	0.00	2.92	0.10	0.20	8.31	98.93
Performance Matched Discretionary Accruals	0.00	1.76	0.09	0.14	6.54	63.13
Performance Matched Free Cash Flow Discretionary Accruals	0.01	12.24	0.93	1.46	3.54	16.45
Interaction of Jones discretionary accruals, corporate governance index and regulation dummy	0.00	0.55	0.02	0.05	4.60	31.15
Interaction of Modified Jones discretionary accruals, corporate governance index and regulation dummy	0.00	0.55	0.02	0.05	4.67	32.07
Interaction of Performance matched discretionary accruals, corporate governance index and regulation dummy	0.00	0.62	0.02	0.05	5.78	57.48
Interaction of Performance matched free cash flow discretionary accruals, corporate governance index and regulation dummy	0.00	7.49	0.26	0.64	5.27	40.50
NZX Listing Tenure	1.00	49.00	14.32	11.92	1.34	0.84
Firm Operating Tenure	1.00	148.00	30.30	34.35	2.14	3.84
Total Assets	1541.00	37874000.00	1732828.69	6024749.78	5.23	26.99
Leverage	0.00	4.57	0.29	0.33	7.31	80.06
Return On Assets	-4.91	3.91	0.07	0.38	-1.58	83.73

Table 15 shows that minimum 25% of corporate governance code compliance for the entire firm and maximum 90% of the factor complied. All the discretionary accrual measurement (Jones Model, Modified Jones Model, Performance Based Model and Performance Based Free Cash Flow Model) have lower discretionary accruals i.e. close to zero. An analysis of skewness and kurtosis shows that all the variables are not normally distributed. A method proposed by Cooke (1998) is used to normalize the variables, which is based on the approach used by Van der Waerden (1952, 1953) . The transformation proposed is achieved by dividing the normal distribution into a number of observations plus one segment on the basis that each segment has equal probability. The same transformation was performed for all the variables.

Table 16, shows the descriptive analysis of transformed data. The skewness and kurtosis results in Table 15 indicated that the variables were not normally distributed, but Table 16 shows that the transformed data is normally distributed which enables more predictable power of findings.

4.5.2 Correlation Analysis

Table 16: Transformed Descriptive analysis

Variables	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Price to Book ratio	-2.91	2.91	0.00	0.99	0.00	-0.13
Tobin's_Q	-2.91	2.91	0.00	0.99	0.00	-0.13
Enterprise Value	-2.91	2.79	0.00	0.99	0.00	-0.14
Corporate Governance Index	-2.91	2.79	0.00	0.97	0.03	-0.18
Jones Discretionary Accruals	-2.91	2.91	0.00	0.99	0.00	-0.13
Modified Jones Discretionary Accruals	-2.91	2.91	0.00	0.99	0.00	-0.13
Performance Matched Discretionary Accruals	-2.91	2.91	0.00	0.99	0.00	-0.13
Free cash flow discretionary accruals	-2.91	2.91	0.00	0.99	0.00	-0.13
Interaction of Jones discretionary accruals, corporate governance index and regulation dummy	-0.67	2.91	0.06	0.85	0.80	-0.35
Interaction of Modified Jones discretionary accruals, corporate governance index and regulation dummy	-0.67	2.91	0.06	0.85	0.80	-0.35
Interaction of Performance matched discretionary accruals, corporate governance index and regulation dummy	-0.67	2.91	0.06	0.85	0.80	-0.35
Interaction of Performance matched free cash flow discretionary accruals, corporate governance index and regulation dummy	-0.67	2.91	0.06	0.85	0.80	-0.35
NZX Listing Tenure	-2.14	2.79	0.00	0.98	0.05	-0.25
Firm Operating Tenure	-2.55	2.79	0.00	0.99	0.01	-0.17
Total Assets	-2.91	2.79	0.00	0.99	0.00	-0.14
Leverage	-1.93	2.91	0.00	0.98	0.08	-0.31
Return on Assets	-2.91	2.91	0.00	0.99	0.00	-0.13

Table 17: Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Tobin's Q (1)	1	0.40***	0.16***	0.05	0.02	0.06	0.05	0.02	-0.06	0.04	0.04	0.03	0.01	-0.04	-0.06	-0.31***	-0.23***	0.20***	-0.10**	0.04	-0.28***	0.10**	0.33***	-0.04	-0.01
Price to Book ratio (2)		1	0.07	0.13***	0.13***	0.09**	0.09**	0.06	-0.01	0.14***	0.14***	0.13***	0.09**	-0.03	0.10***	0.09**	-0.07**	-0.07*	0.05	-0.03	-0.12***	0.01**	0.10**	0.04	0.02
Enterprise Value (3)			1	0.10**	0.48***	0.01	0.00	0.04	0.08**	0.14***	0.14***	0.14***	0.12**	-0.10	0.00	0.06	0.90***	0.33***	-0.05	0.18***	0.01	0.07*	-0.25***	-0.03	-0.06
Regulation Dummy (4)				1	0.14***	-0.04	-0.04	-0.05	0.02	0.87***	0.87***	0.87***	0.87***	0.03	0.29***	0.17***	0.08*	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00
CGI (5)					1	0.04	0.03	0.07	0.05	0.21***	0.21***	0.20***	0.18***	0.02	0.18***	0.31***	0.46***	0.11**	-0.17***	0.28***	0.12***	-0.17***	-0.15***	-0.09**	-0.18***
Discretionary Accruals - Jones Model (6)						1	0.97***	0.58***	0.26***	0.28***	0.28***	0.18***	0.08	0.00	-0.05	0.04	0.01	0.01	-0.10**	0.05	-0.07	0.01	0.02	-0.03	-0.02
Discretionary Accruals - Modified Jones Model (7)							1	0.59***	0.26***	0.27***	0.28***	0.18***	0.08**	-0.01	-0.07	0.03	0.01	0.01	-0.09**	0.06	-0.06	0.01	0.00	-0.03	-0.01
Discretionary Accruals - Performance Matched Model (8)								1	0.27***	0.17***	0.17***	0.27***	0.08*	-0.01	-0.13***	0.04	0.05	0.02	-0.14***	0.02	-0.04	-0.01	0.02	-0.01	0.00
Discretionary Accruals - Performance Matched Free Cash Flow Model (9)									1	0.13***	0.13***	0.13***	0.35***	0.04	-0.04	0.08*	0.11**	0.02	-0.15***	0.14***	-0.08*	0.00	-0.02	-0.10**	-0.05
Corporate Governance Index * DAC – Jones Model * Regulation Dummy (10)										1	1.00***	0.94***	0.85***	0.01	0.25***	0.20***	0.12***	0.02	-0.01	0.01	0.00	0.01	-0.01	0.01	-0.04
Corporate Governance Index * DA – Modified Jones * Regulation Dummy (11)											1	0.94***	0.85***	0.01	0.25***	0.19***	0.13***	0.02	0.00	0.01	0.00	0.01	-0.01	0.01	-0.04
Corporate Governance Index * DAC – Performance Matched Model * Regulation Dummy (12)												1	0.85***	0.03	0.25***	0.20***	0.13***	0.03	0.00	0.01	0.00	-0.01	0.01	0.01	-0.02
Corporate Governance Index * Performance Matched Free Cash Flow Model * Regulation Dummy (13)													1	0.05	0.24***	0.19***	0.11	0.01	-0.03	0.06	-0.02	0.02	-0.01	-0.04	-0.05
Control Shareholding (14)														1	-0.09**	0.02	-0.08**	-0.20***	-0.01	0.16***	-0.10**	0.18***	-0.09**	-0.11**	-0.17***
NZX Listing Tenure 15)															1	0.41**	0.00	0.02	-0.01	-0.04	-0.02	-0.01	0.02	0.09**	0.00
Operating Tenure (16)																1	0.17***	-0.18***	-0.06	0.13***	0.19***	0.00	-0.24***	-0.05	-0.11**
Total Assets (17)																	1	0.21***	-0.01	0.19***	0.10**	0.10**	-0.40***	-0.03	-0.03
Leverage (18)																		1	-0.01	0.09**	-0.02	0.02	-0.08**	-0.03	-0.03
ROA (19)																			1	-0.18***	0.13***	0.19***	-0.12**	0.09**	0.03
Service Sector Dummy (20)																				1	-0.35***	-0.33***	-0.40***	-0.25***	-0.25***
Primary Sector Dummy (21)																					1	-0.14***	-0.17***	-0.11**	-0.11**
Energy Sector Dummy (22)																						1	-0.16***	-0.10**	-0.10**
Goods Sector Dummy (23)																							1	-0.12***	-0.12***
Property Sector Dummy (24)																								1	-0.08**
Investment Sector Dummy (25)																									1

*** Correlation Significant at 1% level;

** Correlation significant at 5% level (two tail);

* Correlation significant at 10% level.

Table 17, shows the correlation matrix for the dependent and independent variables. Regulated environment results positive correlation with firm value measure of price to book ratio ($r=0.13$) at 1% level of significance and enterprise value ($r=0.10$) at 5% level of significance indicates regulated environment enhance higher firm value.

Moreover, it shows that corporate governance index and firm value measurements have a statistically positive relationship, indicating that greater compliance with corporate governance codes increases the value of the firm. Corporate governance index results positive correlation with price to book ratio ($r=0.13$) and enterprise value ($r=0.48$) at 1% level of significance but Tobin's Q. Similarly, performance matched free cash flow model documented statistically significant correlation ($r=0.08$) at 5% level of significance. Discretionary accruals value was taken as an absolute value for measuring firm value (Davidson, Goodwin, & Kent, 2005; Sanchez-Ballesta & Garcia-Meca, 2007), irrespective of the actual amount of the accrual, and it shows that there is a positive relationship between discretionary accruals and firm value.

Control shareholding and firm value shows a consistently negative relationship with more than 10% level of statistical significance, implying that companies with controlling shareholders have lower firm value. The interaction variable among corporate governance index, discretionary accruals (Jones, Modified Jones, Performance Matched and Performance Matched Free Cash Flow Model) and regulation dummy ($CGI * DAC * REGDUMMY$) indicates stronger correlation of firm value with price to book ratio ($r=0.09$) at 1% level of significance and enterprise value ($r=0.12$) at 5% level of significance but Tobin's Q.

The correlation matrix among the sectors is strong correlated with firm value measuring methods as Tobin's Q results primary sector ($r=-0.28$) at 1% level of significance, energy sector ($r=0.10$) at 5% level of significance and goods sector ($r=0.33$) at 1% level of significance. Price to book ratio results strong correlation with primary sector ($r=-0.12$) at 1% level of significance, energy sector ($r=0.01$) at 5% level of significance and goods sector ($r=0.10$) at 5% level of significance. Finally, enterprise value shows, strong correlation with service sector ($r=0.18$) at 1% level of significance, energy sector ($r=0.07$) at 10% level of significance and goods sector ($r=-0.25$) at 1% level of significance. Property and investment sector does not show any statistical significance with firm value.

4.5.3 Regression Analysis

The results of equations 3(a), 3(b), and 3(c) using the measure of all the discretionary accruals are presented in Table 18. All the three definitions of firm value are explained in the discretionary accruals models tested, namely the Jones Model, the Modified Jones Model, the Performance Matched Model and the Free Cash Flow Discretionary Accruals model of discretionary accruals.

Table 18: Regression Analysis Results

Variables	Specification 1: Tobin's Q				Specification 2: Price to Book Ratio				Specification 3: Enterprise Value			
	Jones Model	Modified Jones Model	Performance Matched Model	Performance Matched Free Cash Flow Model	Jones Model	Modified Jones Model	Performance Matched Model	Performance Matched Free Cash Flow Model	Jones Model	Modified Jones Model	Performance Matched Model	Performance Matched Free Cash Flow Model
	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>	<i>Coeff</i>
Intercept	-0.09	-0.08	-0.1	-0.1	-0.15	-0.15	-0.15	-0.21†	0.1	0.11	-0.09	-0.04
Regulation Dummy	0.28	0.27	0.316†	0.34†	0.28	0.28	0.28	0.425*	0.04	0.01	-0.13	1.94†
Corporate Governance Index	0.21**	0.21**	0.21**	0.20**	0.24**	0.24**	0.24**	0.248*	0.48**	0.48**	0.48**	0.49**
Discretionary Accrual – Jones Model(ABS)	0.06				0.10†				-0.03			
Discretionary Accruals – Modified Jones Model (ABS)		0.06				0.11*				-0.04		
Discretionary Accruals – Performance Matched Model (ABS)			0.03				0.08				-0.04	
Discretionary Accruals – Performance Matched FCF (ABS)				-0.3				0.05				1.37
Interaction of Corporate Governance, Regulation and Jones Model Discretionary Accrual	-0.07				-0.06				0.07			
Corporate Governance, Regulation and Modified Jones Model Discretionary Accrual		-0.07				-0.07				0.1		
Corporate Governance, Regulation and Performance Matched Model Discretionary Accrual			-0.1				-0.06				0.01	
Corporate Governance, Regulation and Performance Matched FCF Model Discretionary Accrual				-0.12				-0.17				-1.25**
Control Shareholding	-0.06	-0.06	-0.06	-0.06	-0.15	-0.15	-0.15	-0.16	-0.26**	-0.26**	-0.27**	-0.14**
NZX Listing Tenure	-0.04	-0.03	-0.03	-0.04	-0.01	-0.01	0.01	-0.01	-0.10**	-0.10**	-0.11*	-0.1*
Business Operating Tenure	-0.22**	-0.21**	-0.22**	-0.21**	0.08	0.08	0.08	0.09	-0.04	-0.04	-0.05	-0.52
Firm Size	-0.23**	-0.23**	-0.23**	-0.23**	-0.14*	-0.14*	-0.14**	-0.15**	x	x	x	x
Leverage	0.19**	0.19**	0.2**	0.19**	-0.06	-0.06	-0.06	-0.06	0.23**	0.23**	0.23**	0.23**
Return on Assets	-0.02	-0.02	-0.2	-0.03	0.10*	0.10*	0.1	0.09*	-0.01	-0.01	-0.01	-0.01
Primary Sector	-0.64**	-0.64**	-0.65**	-0.67**	-0.38*	-0.36*	-0.40*	-0.4**	-0.20**	-0.20†	-0.20†	-0.17
Energy Sector	-0.15	-0.15	-0.16	-0.15	0.22	0.23	0.216	0.24†	0.42	0.41**	0.43**	0.43**
Goods Sector	0.48**	0.48**	0.48**	0.47**	0.28*	0.29*	0.278	0.28*	-0.46	-0.47**	-0.47**	-0.46**
Property Sector	-0.12	-0.12	-0.13	-0.15	0.23	0.23	0.212	0.22	0.01	0.01	0.01	0.22
Investment Sector	-0.04	-0.04	-0.04	-0.06	0.23	0.23	0.219	0.21	-0.03	-0.03	-0.03	-0.21
Multiple Correlation Coeff.	0.54	0.054	0.54	0.55	0.33	0.33	0.32	0.32	0.61	0.61	0.61	0.611
Adjusted R ²	0.28	0.28	0.28	0.28	0.08	0.09	0.08	0.08	0.354	0.356	0.36	0.36
F-Statistics	15.18**	15.19**	15.11**	15.39**	4.41**	4.48**	4.27**	4.22**	22.85**	22.91**	22.97**	23.2
Durbin-Watson Stat.	2.02	2.02	2.02	2	2.04	2.04	2.03	2.02	1.86	1.85	1.85	1.85
Observation	560	560	560	560	560	560	560	560	560	560	560	560

* Correlation significant at 5% level; ** Correlation Significant at 1% level; † Correlation significant at 10% level

Table 18 presents the primary multivariate regression analysis to examine the association between compliance with corporate governance codes and firm value after controlling for a number of possible determinants of such specialization. Three specification and four different models under each specification are presented. Enterprise value and performance matched free cash flow are the primary variable of interest in this chapter.

The *first* specification of firm value is based on Tobin's Q. Columns 2 to 9 in Table 18 present the results based on Tobin's Q. These results reveal that firm value is more for the companies that have a higher compliance with corporate governance index. Specifically, Firms that following precisely corporate governance regulation is generating more firm value. The result is statistically significant at 1% level. The regulatory impact of corporate governance affects firm value as measured by Tobin's Q, the performance matched model of discretionary accruals (statistically significant at the 10% level) and the performance matched free cash flow model (statistically significant at the 5% level). However, it should be noted that the performance matched free cash flow model of discretionary accruals has a negative effect on Tobin's Q. The interacting coefficient corporate governance index, regulation dummy and discretionary accruals (CGI*REGDUMMY*DAC⁸) (DAC means in general Jones Model, Modified Jones Model, Performance Matched Model and Performance Matched Free Cash Flow Model) has a negative effect as expected but it is not statistically significant on Tobin's Q specification of firm value. Our results show that although Tobin's Q increased it is not statistically significant with discretionary accruals and regulation, but corporate governance and regulation effects are statistically significant.

The *second* specification of firm value, price to book ratio, indicates (column 10 to 17) that regulations have a positive effect in the performance matched free cash flow model with 5% level of significance. The interaction among discretionary accruals model, corporate governance index and dummy variable (CGI * REGDUMMY * DAC) also have negative coefficients with price to book value ratio but with statistical significance higher than the 10% level. The coefficient for interacting variable is -0.06, -0.07, -0.06 and -0.17 for Jones, Modified Jones, Performance Matched and Performance Matched Free Cash Flow discretionary accruals respectively. However, the corporate governance compliance has a

⁸ Interacting variable of Corporate Governance index (CGI), Dummy variable of Regulation (REGDUMMY) and Discretionary accruals (DAC) measured by Jones (1991), Modified Jones (1995), Performance Matched Model (Kothari et al., 2005) and Performance Matched Free Cash Flow Model based on Free Cash Flow as determinant of Total Accruals.

positive coefficient as 0.24 for each of the discretionary accrual model at the 1% level of significance. This implies that firms that comply with corporate governance criteria and have better internal control systems have a market value higher than the book value of firm. This specification also supports the proposition that firm value has a positive relationship with corporate governance compliance.

The *third* specification of firm value, enterprise value (column 18 to 25), shows a stronger effect of the variables as compared to the Tobin's Q and price to book ratio models. Regulation has a positive and significant effect on firm (enterprise) value for the performance matched free cash flow discretionary accruals model. The corporate governance index coefficient shows statistical significance at the 1% level. This implies that corporate governance compliance leads to greater confidence by stakeholders, which leads to an increase in the value of firm. Theoretically, enterprise value represents a more accurate value as it considers current market value and total debt of firm. Discretionary accruals (Jones, Modified Jones and Performance Matched models) have negative effects on enterprise value. This implies managerial discretionary accrual does affect firm value. More specifically, firm value will decrease if discretionary accruals increase. The Performance Matched Free-Cash-Flow model shows that reducing the discretion of net income leads to an increase in market value (coefficient = -1.25, t-statistics -3.16), and is statistically significant at the 1% level. Enterprise value was found to be much lower for controlling shareholder under performance matched free cash flow model with a 1% level of significance. This implies firm with control shareholding have less effect of corporate governance which ultimately reduces enterprise value. The coefficient of New Zealand Stock Exchange listing tenure (NZXLISTEN) is negative and is statistically significant at the 1% level. This implies firm listed for long time in NZX has lower enterprise value than relatively recent listed status. This result is consistent with the argument that uncertainty contributes to firm value for a young firm (Pastor & Veronesi, 2003). Moreover, it implies that older firms who have established bureaucratic processes over business activities tend to lack flexibility that enables them to rapidly adjust to changing conditions, which can lead to a reduction in market performance as compared to younger firms (Marshall, 1920).

Briefly, corporate governance index shows the most consistent positive coefficient with statistical significance for all the specification and discretionary accrual model. Moreover, as mentioned above, to focus on primary variable of interest as interaction of corporate governance index, performance matched free cash flow and regulation dummy shows

statistically significant coefficient -1.25 at 1% level of significance for enterprise value specification and the null hypothesis rejected.

All the definitions with discretionary accruals have separate measure of regression. Tobin's Q is consistently showed $R^2 = 28\%$ where as price to book ratio is consistently shows $R^2 = 8\%$ but Modified Jones model discretionary accruals shows $R^2 = 9\%$. Finally, enterprise value measure of firm value shows the highest $R^2 = 36\%$ and consistent value across the models. To assess the statistical significance of all the firm value definitions have an *F-stat* which is statistically significant at the 1% level of significance.

4.6 Conclusions and remarks

Corporate governance research is one of the most researched areas in accounting. However, very few observable inputs are available to evaluate enterprise value as a proxy of firm value based on corporate governance compliance. A sizable body of empirical research has found that firm value is determined by corporate governance compliance and certain firm specific characteristics. This chapter expands this stream of research by incorporating enterprise value as a measure of firm value and discretionary accruals calculation using different models as an important explanatory variable. Companies are complying corporate governance practice over the time for regulatory or voluntary purpose because this compliance enhances better internal monitoring system reduces discretionary accruals.

Although discretionary accrual has been researched from informational asymmetry and opportunistic behaviour aspects, to the best of our knowledge, this is the first study to document an association between discretionary accruals as a proxy of opportunistic behaviour and firm valuation. This study finds evidence consistent with the proposition that corporate governance compliance reduces management opportunistic behaviour and results in increased firm value because of significant improvements in internal control mechanism due to compliance (Larcker, Richardson, & Irem, 2005). This research can be further extended on management incentive with performance matched free cash flow model.

Chapter 5

Conclusion

5.1 Introduction

Chapter five is developed as follows: 5.1 presents a holistic discussion and summarizes the findings regarding the three objectives; in section 5.2, the regulatory implication is discussed; contributions are discussed in section 5.3 and finally, limitations and future research directions are discussed in section 5.4.

5. 2 Discussion of findings

The dominant paradigm of corporate governance research assumes voluntary regulation is not effective for better compliance. However, firms comply with better corporate governance practice in the absence of mandatory obligation. Thus, the importance of regulation existence is irrefutable since the existence of corporate governance regulation creates pressure on the firms to comply. Moreover, increasing pressure is applied from peer companies who comply with regulation and non-compliant companies are at risk of losing investor confidence.

The findings of objective one show firms' compliance increases to a significant level when regulation exists in the business environment. Corporate governance regulations are mostly 'Comply or Explain' in New Zealand's institutional environment. However, the corporate governance index indicates that none of the companies follow full compliance with corporate governance regulations. Higher corporate governance index scores have significant relationships with corporate governance regulation, listing tenure, operating tenure and large shareholdings. Firm size also has a significant relationship with the corporate governance index; however leverage doesn't show any significance. This implies that voluntary regulation has a positive impact on compliance with regulation. Firms also practice better compliance with the increasing life of the business and the listing tenure of the firm. All sectors of business compliance have significant relationships with their corporate governance index except for the property and investment sector, which does not show any significant coefficients. The primary, energy and goods sectors show significant increases in their corporate governance index alongside the existence of regulations.

The findings of objective two show higher compliance of corporate governance with regulation reduces discretionary accruals. Since net income (earnings) is the main indicator of firm performance firms' actions are expected to be reflected in earnings. The measure used in

this research, performance matched free cash flow model, shows the significance of explanatory variables better in comparison with other commonly used measures of discretionary accruals. More importantly, the performance matched free cash flow model shows higher compliance with corporate governance regulations reduces managerial discretion. Higher corporate governance compliance with regulation increases the board independence and accountability of decision making process. Firms operating with controlling shareholders indicated increased discretionary accruals. Due to higher monitoring of regulators and investors, firms' discretionary accruals reduce with listing tenure was also evidenced. Consistent with the first objective of this research, the property sector didn't show any impact of discretionary accruals on the performance matched free cash flow model. However, the primary, goods, energy and investment sectors show significant impact on discretionary accruals, more significant than Jones Model (1991), Modified Jones Model (1995) and Performance Matched Discretionary Accruals Models.

The findings of objective three show firms' corporate governance compliance with regulation increased the firm value. Firm value was measured using the enterprise value of firm and compared with commonly used measure such as Tobin's Q and Price to Book ratio. The results show that higher compliance of corporate governance with regulation increase higher enterprise value, implying better corporate governance increases the accountability of management and reduces managerial opportunistic behaviour. Consequently, shareholders gain confidence to invest in better practiced firms. In addition, the lower level of opportunistic behaviour by management increases the possibility of quality information provision for investors. The result also shows that regulation increases firm value as investors enjoy a more secure investing environment. Moreover, a controlling shareholder's existence in a firm creates lower firm value as minority shareholders have lower confidence to invest. Primary, goods and energy sectors show higher enterprise value with higher corporate governance index. However, the property and investment sectors do not show any significant impact of governance on consequent firm value.

5.3 Regulatory Implications

Important regulatory implications can be drawn from these research findings. Firstly, this research provides holistic evidence on corporate governance compliance. The maximum value of corporate governance index indicates none of the companies fully complied with corporate governance regulations, possibly due to the 'comply and explain' nature of New Zealand's regulation. However, the criticism that one size does not fit all can also be applied.

Consequently, regulators could alter the governance codes according to the business sector and company size.

Secondly, regulators can impose more monitoring on the companies who exhibit lower corporate governance compliance.

Thirdly, corporate governance codes and principles do not indicate the optimum size for board and board committees. Moreover, corporate governance regulations do not have any guidelines for outside directorship holdings and meeting frequency. Regulators may consider imposing limits on the number of outside directorships and meeting frequency requirements for directors.

5.4 Contributions

Although accounting research on corporate governance is commonly used this research contributes significantly in several ways.

Firstly, this research provides evidence of the effectiveness of corporate governance regulation in the New Zealand institutional environment. Furthermore, while previous research has provided evidence of boards of directors, managerial compensation, and external audit fees impact on firm value or earnings management separately this research considers boards of director, board committees, external auditing, managerial shareholding and dual listing together to identify determinants of compliance in the absence of any mandatory obligation. Moreover, regulatory body in New Zealand will find the implication of corporate governance regulation through this research. Academician will be benefited by the evidence of earnings management and firm value affects of corporate governance in small but developed economic scenario such as New Zealand.

Secondly, this is the first research in New Zealand which considered both short and long term consequences of corporate governance regulation. This research evidenced higher compliance with corporate governance regulation reduces managerial discretion in the short term and firm value increases as a long term effect.

Thirdly, this research considered free cash flow as a measure of discretionary accruals and showed managerial discretion increases when more free cash flow exists in businesses. Conversely, managerial discretion on free cash flow reduces when firms comply with higher corporate governance practices.

Finally, this research established enterprise value as an indicator of firm value. In the absence of mandatory obligation, enterprise value reflects the true value of a firm, considering both free cash holdings and debts of the business. It also implies that investor confidence increases when firms comply with higher governance practices.

5.5 Limitation & Future Research

This research suffers from a few limitations which will enhance future research on the basis of this thesis. Those are as follows:

Firstly, this research prepared a corporate governance index based on 70 companies which met the sampling criteria. Future research could be undertaken to see the effects of corporate governance compliance in a larger market.

Secondly, this research did not include stock option information due to its unavailability. Researchers are keen to find the effectiveness and consequence of stock options in corporate governance and earnings management framework and the opportunity to work in a stock option oriented institutional environment such as the USA or Canada remains.

Thirdly, this research considered only one institutional environment: New Zealand. It would be informative to compare its effectiveness of higher corporate governance compliance with regulation in a free cash flow model using enterprise value with other, similar countries.

Fourthly, this research did not analyse the effect of board committees on earnings management and firm value. Recent researchers are keen to find the effectiveness of remuneration committees, nomination committees and especially audit committees. In future, identifying the determinants of board committees and their consequences could be a potential research area.

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Appendix A: Corporate Governance Regulations

Country/Institution	Year	Compliance Nature	National Corporate Governance Code
Argentina	2001, June	Voluntary	Argentine Capital Markets Reform Law
Australia	2003, March	Voluntary	Australian Stock Exchange (ASX) principles of Good Corporate Governance
Austria	2002, September	Voluntary	Austrian Code of Corporate Governance
Bangladesh	2004, March	Voluntary	The Code of Corporate Governance for Bangladesh
Belgium	2004, December	Voluntary	Belgium Corporate Governance Code
Brazil	2004, March	Voluntary	Code of Best Practice of Corporate Governance
Bulgaria	2007, October	Voluntary	Bulgarian National Code for Corporate Governance
Canada	2003, December	Voluntary	Toronto Stock Exchange Guide to Good Disclosure
China	2004, January	Voluntary	Provisional Code of Corporate Governance for Securities Companies
Commonwealth	1999, November	Voluntary	CACG Guidelines: Principles for Corporate Governance in Commonwealth
Cyprus	2006, March	Voluntary	Cyprus Corporate Governance Code
Czech Republic	2004, June	Voluntary	Corporate Governance Code based on OECD Principles
Denmark	2001, December & 2005, August	Voluntary	Norby Report & Recommendations & The Revised Recommendation for Corporate Governance in Denmark
Egypt	2006, October	Voluntary	Code of Corporate Governance for Private Sector in Egypt

Corporate Governance Regulations (continued)

Country/Institution	Year	Compliance Nature	National Corporate Governance Code
Estonia	2006, January	Voluntary	Corporate Governance Recommendations
Finland	2003, December	Voluntary	Ministry of Trade & Industry Guidelines
France	2003, October	Voluntary	The Corporate Governance of Listed Corporation
Germany	2002, February & 2003, May	Voluntary	The Cromme Code & The Cromme Code Amendment
Greece	2001, August	Voluntary	Federation of Greek Industries principles
Hong Kong	2004, November	Voluntary	Hong Kong Code of Corporate Governance
Hungary	2008, March	Voluntary	Corporate Governance Recommendation
Iceland	2009, June	Voluntary	Corporate Governance Guidelines
India	2000, June	Voluntary	Report of the Kumar Mangalam Birla Committee on Corporate Governance
Indonesia	2007, January	Voluntary	Code of Good Corporate Governance
Ireland	1999, March	Voluntary	IAIM Guidelines
Italy	2002, July	Voluntary	Corporate Governance Code
Jamaica	2006, October	Voluntary	Code on Corporate Governance
Japan	2001, October	Voluntary	Principles of Corporate Governance for Listed Companies
Kenya	2002	Voluntary	Principles for Corporate Governance

Corporate Governance Regulations (continued)

Country/Institution	Year	Compliance Nature	National Corporate Governance Code
Latvia	2005, December	Voluntary	Principles of Corporate Governance and Recommendations on their Implementation
Lebanon	2006, June	Voluntary	Corporate Governance Code for Small and Medium Enterprises
Lithuania	2003, April	Voluntary	Corporate Governance Code for the Companies listed on the National Stock Exchange of Lithuania
Luxembourg	2009, September	Voluntary	The Ten Principles of Corporate Governance of the Luxembourg Stock Exchange
Macedonia	2003, June	Voluntary	White Paper on Corporate Governance in South-Eastern Europe
Malaysia	2007, October	Voluntary	Malaysian Code on Corporate Governance
Malta	2005, November	Voluntary	Principles of Good Corporate Governance
Mexico	1999, July	Voluntary	Codigo de Mejores Practicas Corporativas
Morocco	2008, March	Voluntary	Moroccan Code of Corporate Governance Practices
Netherlands	2003, July	Voluntary	Dutch Corporate Governance Code
Nigeria	2006, March	Voluntary	Code of Corporate Governance for Banks in Nigeria Post Consolidation
Norway	2007, December	Voluntary	The Norwegian Code of Practice for Corporate Governance
Pakistan	2002, March	Voluntary	Code of Corporate Governance

Corporate Governance Regulations (continued)

Country/Institution	Year	Compliance Nature	National Corporate Governance Code
Philippines	2002	Voluntary	Code of Corporate Governance
Poland	2007, July	Voluntary	Code of Best Practice for WSE Listed Companies
Portugal	2003, November	Voluntary	Securities Market Commission Recommendations
Russia	2002, April	Voluntary	The Russian Code of Corporate Conduct
Singapore	2005, July	Voluntary	Code of Corporate Governance
Slovakia	2008, January	Voluntary	Corporate Governance Code for Slovakia
Slovenia	2007, February	Voluntary	Corporate Governance Code
South Africa	2002, March	Voluntary	King II Report
South Korea	1999, September	Voluntary	Code of Best Practice for Corporate Governance
Spain	2003, January	Voluntary	Transparency and Security Commission
Sri Lanka	2006, July	Voluntary	Draft rules on Corporate Governance for Listed Companies
Sweden	2004, December	Voluntary	Report of the Code Group
Switzerland	2002, June	Voluntary	Swiss Code of Best Practice for Corporate Governance
Taiwan	2002,	Voluntary	Taiwan Corporate Governance Best Practice Principles
Thailand	2006, March	Voluntary	The Principles of Good Corporate Governance for Listed Companies

Corporate Governance Regulations (continued)

Country/Institution	Year	Compliance Nature	National Corporate Governance Code
Trinidad and Tobago	2006, May	Voluntary	Corporate Governance Guidelines
Tunisia	2008, June	Voluntary	Guide de Bonnes Pratique de Governance des Entreprises Tunisiennes
Turkey	2003, June	Voluntary	Corporate Governance Principles
UK	2003, July	Voluntary	The Revised Combined Code
USA	2002, June & 2003, April	Compulsory	Sarbanes-Oxley Act & New York Stock Exchange Corporate Governance Rules